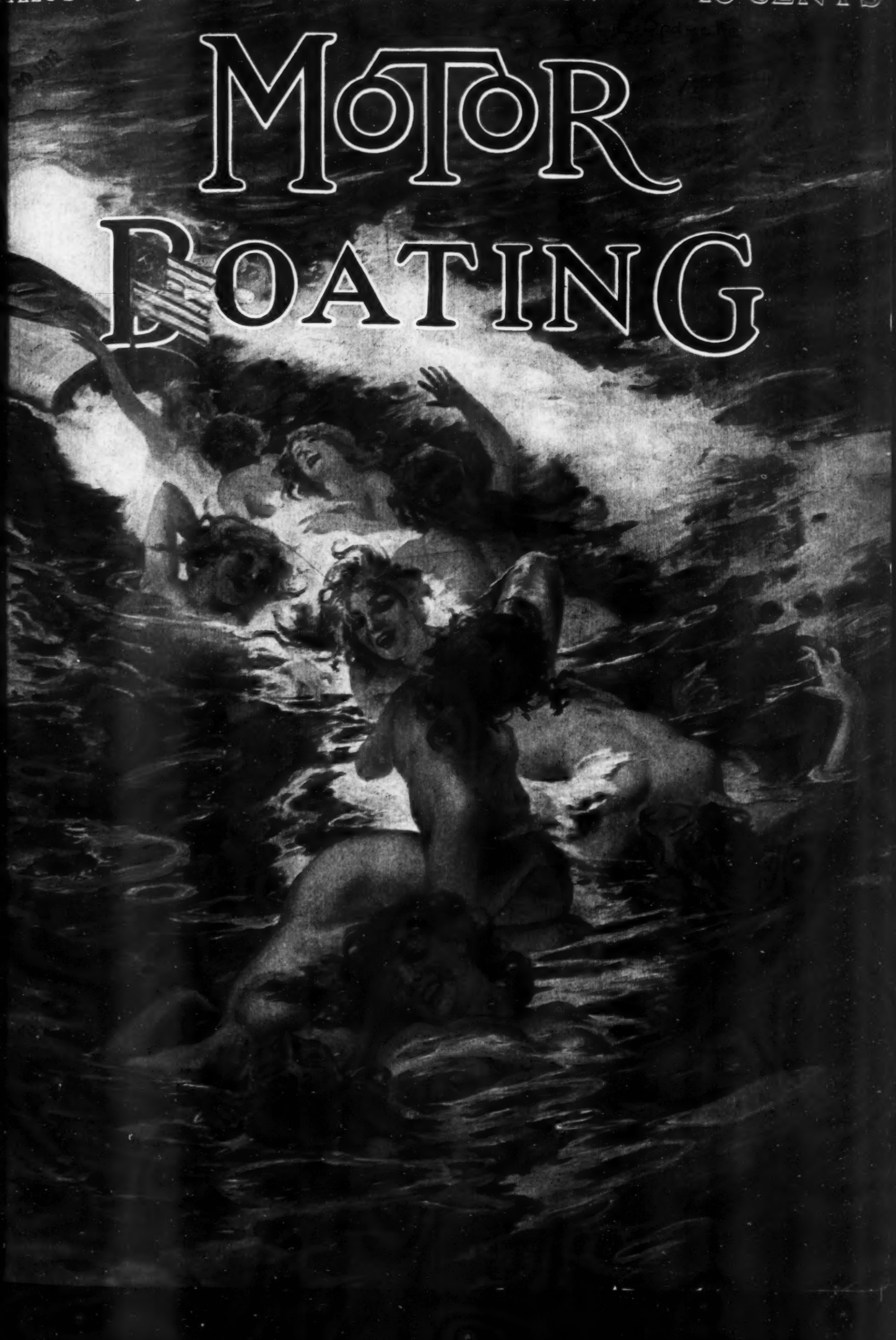
MARCH 1910

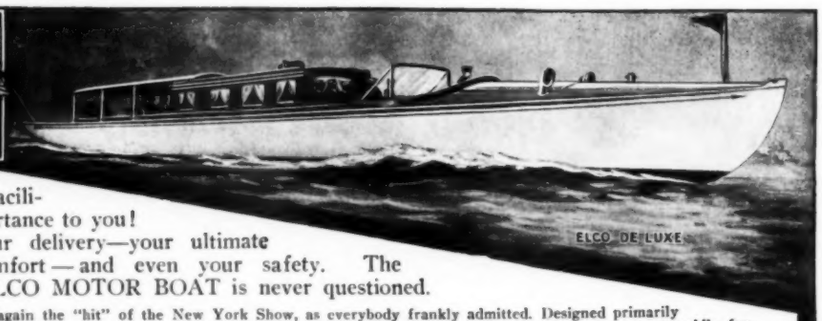
The New York Show

10 CENTS

MOTOR BOATING



Elco MOTOR BOATS



Our reputation and facilities are of first importance to you! They guarantee your delivery—your ultimate economy — your comfort — and even your safety. The supremacy of the ELCO MOTOR BOAT is never questioned.

The **EL-CO-DELUXE** was again the "hit" of the New York Show, as everybody frankly admitted. Designed primarily for day service, but equipped with sleeping accommodations for five, it is used for short cruises as one uses an automobile for touring. Luxury of equipment, together with the certainty of its SELF-STARTING ENGINE, it is the very highest refinement of Boat-building.

The **ELCO CRUISER** was designed to accomplish the greatest degree of sea-worthiness and comfort, sleeping seven people, in a 40-foot boat. Equipped with a 20 H. P. Engine, it was acknowledged at the Show to be the "model 40-foot Cruiser"—the best in design, construction and power equipment ever built.

SPEED *COMFORT* *RELIABILITY*

Elco Gasoline Express Launches
"Will serve you on the water as the Automobile does on land"

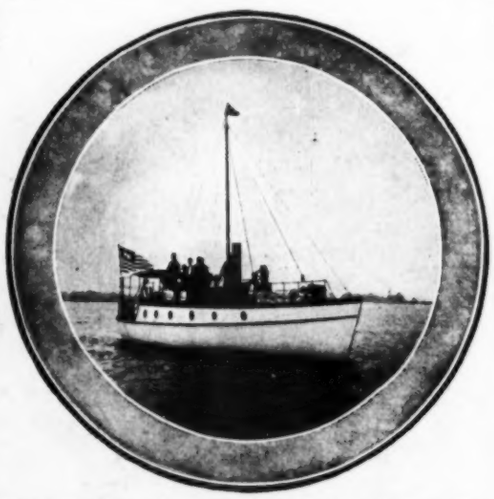
26-ft. Elco Gasoline Express Launch.	40 H. P. Mahogany finish.	Speed, 18 miles.	$2,000.
21-ft. Elco Gasoline Yacht Tender.	40 H. P. Mahogany throughout.	Speed, 22 miles.	$3,000.
35-ft. Elco Gasoline Express Launch.	40 H. P. Mahogany throughout.	Speed, 22 miles.	$4,000.

Write for our latest catalogue of Gasoline Motor Boats and Express Launches.

Address **Elco** 201 Avenue A, Bayonne, N. J.

27 minutes from New York Liberty St., or 23 St. Ferry, C. R. R. of N. J.

Chicago Showrooms 1206 Mich. Ave.



Yacht "Heather," winner of the New York Bermuda Ocean Race. Equipped with 40-50 H. P. "STANDARD" Engine.

Standard Marine Engines

Over 100,000 H. P. in service.

That the STANDARD has been selected for the finest yachts and launches built this year and now building for the coming season is but another proof of their popularity.

A well developed product built by an old established company.

If you are interested in results write for our catalogue.

Immediate Deliveries

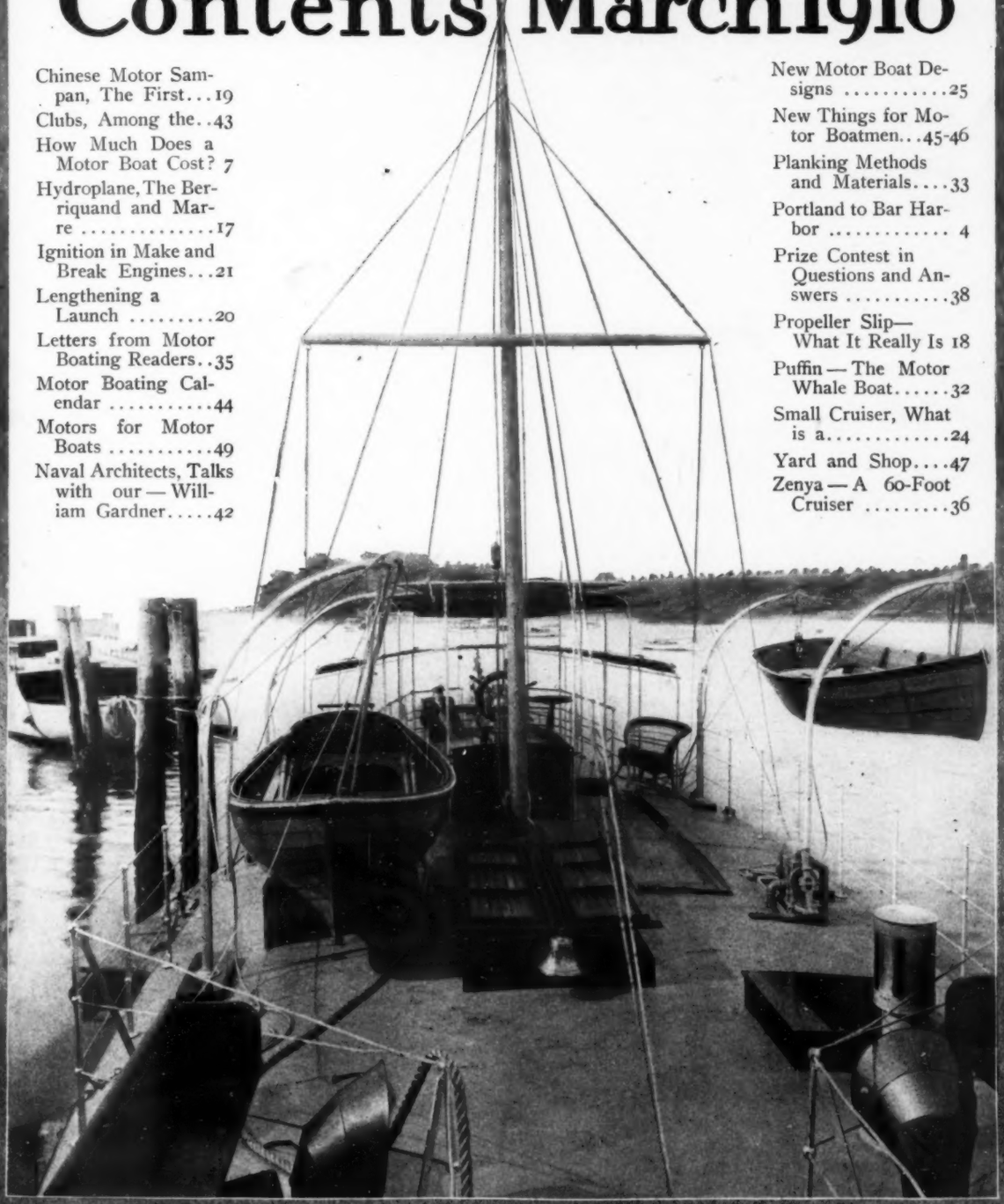
Built in sizes from 8 to 2000 H. P.

STANDARD MOTOR CONSTRUCTION COMPANY

172-180 WHITON STREET, JERSEY CITY, N. J., U. S. A.

Contents March 1910

Chinese Motor Sampan, The First...19
Clubs, Among the..43
How Much Does a Motor Boat Cost? 7
Hydroplane, The Berriquand and Marre 17
Ignition in Make and Break Engines...21
Lengthening a Launch 20
Letters from Motor Boating Readers..35
Motor Boating Calendar 44
Motors for Motor Boats 49
Naval Architects, Talks with our — William Gardner.....42
New Motor Boat Designs 25
New Things for Motor Boatmen...45-46
Planking Methods and Materials....33
Portland to Bar Harbor 4
Prize Contest in Questions and Answers 38
Propeller Slip— What It Really Is 18
Puffin — The Motor Whale Boat.....32
Small Cruiser, What is a.....24
Yard and Shop....47
Zenya — A 60-Foot Cruiser 36



The National Magazine **MOTOR BOATING** of Motor Boating

March, 1910. Vol. V. No. 3.

Entered as second-class matter at the New York, N. Y., Post Office.

Copyright, 1910, by New Publication Company

Published Monthly by NEW PUBLICATION COMPANY, 1789 BROADWAY, NEW YORK CITY

G. L. Willson, President George von Utassy, Treasurer C. J. Shearn, Secretary

Telephone: 8600 Columbus Cable Address: Motoria

10 *cents a copy. Subscription* $1.00 *a year. Foreign* $2.00 *a year.* European Agents: Saarbach's News Exchange, Mainz, Germany.

Photograph copyright 1910 by Edwin Levick.

"The Deaf Gray Bearded Seas."

MOTOR BOATING'S SURF SERIES, No. 1.—This is the first of a remarkable series of surf pictures which will appear in the several successive issues of Motor Boating. The wonderful action in these pictures and the beautiful formation of the breakers, caught by the camera, cannot fail to appeal to every lover of the sea. And who is not a lover of the sea.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

The New York Motor Boat Show.

Tho Madison Square Garden Exhibition of the N. A. E. and B. M.
Something About the Tendencies in Design and the Things Accomplished.

IF the season of 1910 was started down the ways at Boston last month, the splash is heard when she hits the water in New York this week of February 19th with the second big motor boat show of the year, which is being held in Madison Square Garden.

Even if the snow is still with us, even if the rivers are still full of floating ice, even if the boats of last year are still resting on the blocks, the interest in motor boating, in boats and the things that go with them is hardly less keen now than when the season is in full swing. The shows prove this with the thousands that they draw to see the things exhibited.

Never before has the future of motor boating from the points of view of both sport and business seemed so bright as now. The wave of returning prosperity is not only bringing newcomers into the sport in larger numbers than ever before, thereby increasing the number of craft that will float on American waters during the coming season, but the tendency to buy larger boats with higher power or more complete equipment has resulted in giving a big impetus to the trade.

During the past year every manufacturer has been striving for new features and advanced ideas in engine, hull and fittings. The racing man, the cruising owner and the plain ordinary everyday boat owner have been catered to in every possible way by the manufacturers of engines and equipment and by the builders of boats.

The exhibition now being held in Madison Square Garden demonstrates the great progress that has been made in the development of the marine gasoline engine, and of hulls designed for this type of engine. So great has been the development that real comfort can now be had in boats of comparatively small size and high speed obtained by craft which a year or two ago could travel along only very slowly. One of the notable features of the show is the number of high speed craft exhibited. The models of these craft are admirable in every way and many of them are capable of making from twenty to twenty-five miles an hour with motors of but moderate power this speed being obtained as a result of the work of designers who have studied to obtain the greatest possible power from a given engine and the best combination of motor and hull. The boats of which we speak are not in any sense racing machines, but are so well equipped that they make comfortable runabouts and day cruisers of maximum safety and seaworthiness.

Cruising yachts capable of accommodating parties of from ten to twelve are on exhibition. Engines varying from one-half horse-power to three hundred horse-power are shown complete and dissected. There are all sorts of accessories, including propellors of many designs, reverse gears, carbureters, hardware, ignition outfits and electric light plants.

Originally the motor boat was a gasoline launch, and it was varied in almost no way other than in length and beam. The big gasoline launch was an overgrown little one and the little one was a cramped up copy of the one of medium size. They all were afternoon, family party boats—nice little craft like the kind in which you can ride around the lake in the park for ten cents a trip. There was this type of boat and there was, of course, the big steam yacht, but the gasoline cruiser as we know it now was unknown then. And that was not so very long ago.

To-day the motor boat is a distinct type, for whatever class of service it is built. The runabout is not a launch with a gasoline engine, the 100-footer is not a steam yacht with the boiler left out and another kind of engine substituted and the 25 to 40 foot cruiser—the floating house of the "average man"—is not a modification of something else—it is not a sail boat with the mast sawed off, but a thing that is new—a thing which did not exist before the coming of the gasoline motor. And now that the types have been developed, attention is being given to the problem of securing comfort especially in cruisers of the smaller sizes. It is being realized that it is not possible to have accommodations for as many people in a cottage as in a hotel. Half comfort is no comfort at all, and it is being more generally recognized each year that the boat that provides plenty of room for a few is better than the boat that provides less than enough room for many. The aim now seems to be to get a whole lot of comfort for a small number rather than some sort of accommodations for the greatest number possible. Some very interesting examples of what can be done in providing genuine comfort on board a small sized cruiser are to be seen in the show.

A glance over the exhibits at the Boston and New York shows confirms the belief that there is a gradual but marked increase in the power of motors. In boat design the amount of horse-power per foot of length is increasing. The motor makers are getting this increase of power by using not only larger cylinders but a greater number of them per motor. Threes and fours are much more plentiful than heretofore, and sixes are quite common.

We hear every year of "refinement of details," and this phrase must be used again. In finish and the care given to the working out of the smaller, seemingly less important parts, the 1910 marine motors are undoubtedly ahead, as a class, of any before produced. The completeness of their equipment is also an important characteristic. It is now very often the case, in fact rather the rule than the exception, that the motor maker supplies the entire motor equipment including ignition accessories, lubricator, muffler, carbureter, etc.—all of them tested out by him and selected because of their adaptability to his product. With many of the new motors, magnetos are regularly supplied and on many others provision is made in the design for the ready attachment of this source of ignition current.

"Five Islands harbor has long been a rendezvous of Boston and Portland Yacht Clubs."

From Portland to Bar Harbor.

What the Maine Coast With its Numerous Little Harbors Offers to Motor Boatmen. A Week's Cruise Outlined With Practical Suggestions for Making it.

By Alfred O. Elden.

IT is possible that last summer's experience of the New York Yacht Club coming from Boston to Portland may have a tendency to influence small boat owners against the Maine coast as a cruising route. There is not the slightest reason why it should, for ever since the advent of the gasoline engine hundreds of motor-equipped craft have safely made the run between the months of May and October without the slightest mishap. Two days before the New York fleet sailed from Marblehead a little 23-foot speed boat, 3 feet and 6 inches in width, powered with a three-cylinder 12-horse motor, sped out of Boston Harbor, across Massachusetts Bay and down the coast line at a 16-mile an hour jog. Its single occupant leaned nonchalantly back in his wicker chair after he had dropped the Killick in Peaks Island Roads long before the shades of night began to fall and calmly remarked that not a drop would have spilled from a glass of water placed on the turtle deck of his craft in the whole run had he placed it there.

The stiff blow the New York yachtsmen ran into was one of those summer gales that occasionally hit the New England coast line haphazard regardless of the Old Farmer's Almanac and the United States Weather Bureau. The ordinary small boatmen, cruising for pleasure would never have thought of leaving Marblehead in the more than whitcap breeze that was swirling over the blue waters that day. No censure should be given those who issued the sailing orders, however, for it could not be foreseen that one of the worst summer storms in years was blowing up and there was not a craft in the whole fleet that was not capable of successfully coping with anything ordinary in the weather line that might come up during the summer months. The blow the fleet struck was simply out of the ordinary for August, that was all. And, at that, probably not one of the stout-hearted amateur yachtsmen would now eliminate that trying two days' experience, even were it possible, from the 1909 cruise of the New York Yacht Club. It was an incident of life on the ocean wave, and it will be many months before the participants in that memorable run will have told all the exciting events there are to tell, all the feats of skilful yacht handling that characterized that thrash to windward.

The run from Portland to Bar Harbor, even to Eastport, is a favorite vacation trip for Portland small boat owners and for dozens of yachtsmen to the westward who have long since discovered that there is no finer cruising ground along the north Atlantic sea coast. Scores of power boats, cabin cruisers, ranging in length from 30 to 40 feet, took the trip last summer and their owners and guests are unanimous that no finer experience ever fell to their lot. From the time the motor is started in Portland until the cruise ends at Maine's most fashionable summer resort on Mount Desert Island, an ever changing panorama of unsurpassed beauty and interest presents itself to the view of the favored yachtsmen.

Given, a seaworthy cruiser; a reliable motor; a well-stocked larder; and, I might add, locker, too, for this is prohibition Maine you know; a congenial crew of good fellows and fair weather added to this, and the result is a combination conducive to a pleasure trip that will never be forgotten by the lucky participants. The small boatman cruising from Portland to Bar Harbor can make the objective point in a couple of days if he cares to, but if he is wise he won't do it. Use up a week, at least, and view a small part, yes, an infinitesimally small part of the sea and shore beauties Maine has to offer. It isn't necessary to give exact courses; the charts tell those. Speaking generally it is an easterly run up the coast with a hundred way-stations worth stopping at.

Personally, the Coast and Geodetic Survey Charts issued by Uncle Sam please me and tell me all I want to know about the trip. Leaving Portland one fine July morning we headed for White Head passage between Cushings and Peaks Island. On the starboard hand rose majestic White Head and the photographically inclined members of the crew got busy with the snap-shot machines. It is a rugged promontory and its importance as an observation station was long since recognized by the United States government. Incidentally, it might be mentioned here that Portland Harbor is the third most strongly fortified port in the country and here at Cushings Island are some of the most powerful guns, the central fire station and the observation station for all the other fortifications all being connected by cable.

Typical of the country—a characteristic view of the harbor from South Bristol, Me.

Camden, one of the numerous stopping places on the run along the Maine Coast.

Off in the distance you will see a lighthouse. It is Half Way Rock and it is a good point to head for. If the sea is smooth and you have a bundle of old magazines you don't care for you may be sure the lonely dwellers in this ocean tower will appreciate them. Point the nose of your craft now for the mouth of the Kennebec River, past Cape Small Point and inside of Seguin Island Light. As I stated before I am not going to give the shortest and most direct route to Bar Harbor, for it is only the speed merchants who lay off that course. We were out for pleasure and while there were dozens, yes, probably hundreds of places worthy of visiting that we did not visit, I am quite positive the average yachtsman would find hard work to improve on our course.

Leaving Seguin astern we headed directly into the mouth of the Sheepscot River for Five Islands. This has long been a favorite rendezvous of the Boston Yacht Club and of the Portland Yacht Club. It is quite a summer settlement and a few hours can be spent here to good advantage. Cross the river, leave the Green Islands on the port side and round the point into Townsend's Gut. It is a picturesque sail of a mile or two down this narrow passage into Boothbay Harbor. Boothbay is another favorite anchorage spot for visiting yachts and any time during the summer months it is an excellent place in which to rendezvous for a day or two taking little side trips to such noted summer resorts as Squirrel Island, Ocean Point, Mouse and Capitol Islands or the main land at Southport.

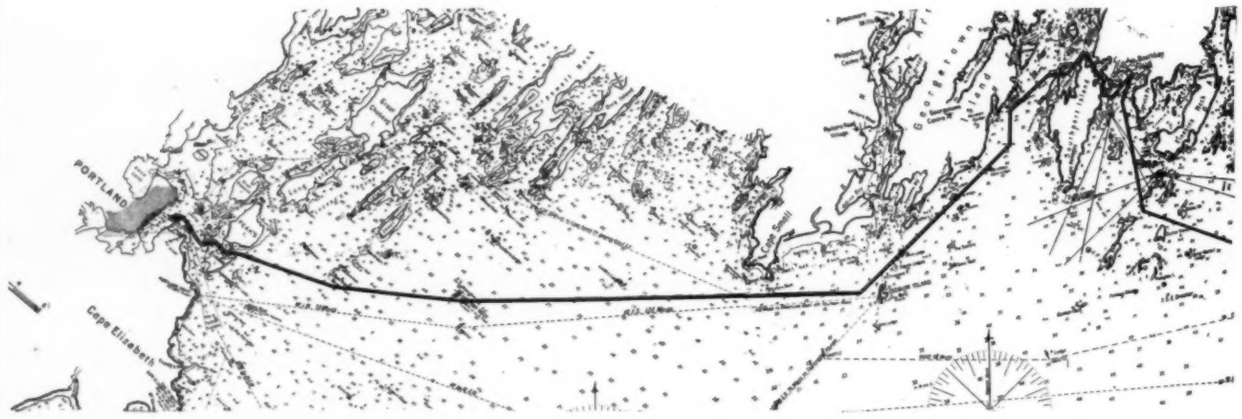
And while you are at Boothbay Harbor there is one trip that should not be missed. Take the 16-mile run out in the open ocean to Monhegan Island. It is worth anybody's while. Monhegan is famous for a good many things. It is one of the ruggedest upheavals of nature on the coast. Some of the finest lobsters taken in Maine waters are caught around Monhegan. The fishermen all work together. They got together not long ago and had the Maine Legislature make a special law for them governing the months when it was legal to fish for the crustaceans, and to a man they live up to the provisions of the law. Woe betide the outside fisherman who attempts to set his lobster pots around Monhegan except at the prescribed time of the year. He will very likely, when he goes to haul, find his warps have been cut and that his pots are serenely floating miles out to sea or else lying on bottom with no means of raising them. One couldn't very well dive for missing gear because, as the chart shows, there are something like 300 feet of water around the rugged shores of this island rock. In the summer time a fair harbor can be obtained at Monhegan although, of course, in an easterly breeze there is always a ground swell surging restlessly into every nook and cove.

We did not care to run back to Boothbay when we left Monhegan, so headed straight for Pemaquid Point Light. It was doubling back a bit on our way along the coast, but there is too much to see at Pemaquid to let it go with simply a gaze through the glasses. There's a whole bunch of history connected with Pemaquid and a whole bunch of natives anxious to tell it to you. There are the remains of a paved street, the blocks of which were laid many years before the time of modern street commissioners and graft. The most interesting thing at Pemaquid is, perhaps, the old fort. Old? Well, it is mostly old but partly new for it has recently been restored to what is supposed to have been its original shape and several months ago was dedicated or re-dedicated in the presence of Governor Fernald and all sorts of other Maine high dignitaries. The local traditions of ancient Pemaquid are too many to enumerate, but there one can see a choice collection of Indian relics that were not imported from a New York curio manufactory but really dug out of the ground, and, if he be so inclined, can spend more than one day to good advantage.

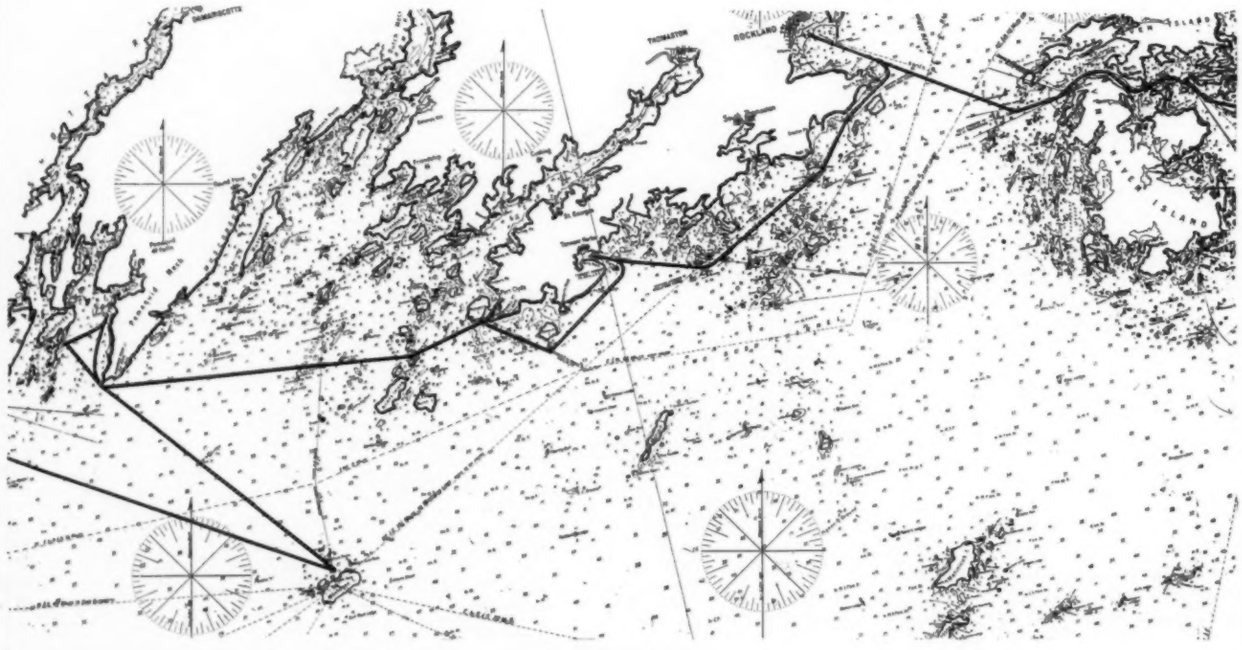
After we had seen enough of Pemaquid we doubled back on our route two miles farther into Christmas Cove, another favorite rendezvous for yachtsmen. The Eastern Yacht Club on its recent cruise spent a night at this place. There is a fine hotel, lots of summer people, plenty of small boating and a magnificent harbor and anchorage in any kind of weather that strikes. There is a draw-bridge that opens out into Johns Bay and the grizzled old tender will open it without fee at anything from one to a dozen blasts of the whistle, although in Maine, as elsewhere, the doctor orders four.

Round the Pemaquid Point Light again and you have a straight run of about five miles across the mouth of Muscongus Bay to the Egg Rock beacon. Leave the red buoy on the starboard hand and it's a two-mile run across to Davis Straits. Two miles more takes you in between Hoopers Island and the Marshall Point Light to Port Clyde, one of the trimmest little stopping places along the whole Maine coast. The camera man can get busy here for there are canning factories, a young marine railway, an all-the-year-round village and harbor secure from the elements in any weather. It is a short run of five miles or so around Mosquito Island to Tenants Harbor, another beauty spot of the Maine coast. From here it is good water straight across to the Whitehead Light and the entrance to the famous Mussel Ridge Channel.

New Harbor, another of the characteristic harbors that make the Maine Coast a delightful place for the motor boatman.



First Section.



Second Section.

Third Section.

Chart showing the course of the cruise along the Maine Coast from Portland to Bar Harbor.

This passage looks a bit mussed up on the chart, but it is almost a straight course, plainly buoyed and with plenty of water, around Owls' Head and into Rockland, another stopping place of the New York yachts. Rockland is one of Maine's busiest little cities, with its shipping, lime quarries and many manufactories and excellent stores. At practically all the points so far mentioned gasoline and supplies can be obtained. For that matter there are few points along the coast now where the Standard Oil Company has not sent its emissaries, and the fuel question need be the least of the yachtsman's worries.

From Rockland there are five or six miles of clear water into the Fox Island Thoroughfare and North Haven. The yachtsman who goes outside and doesn't take in this passage will miss one of the sights of the trip. The thoroughfare is well buoyed and it is only a four or five mile run out into Penobscot Bay. The side runs from here are almost too numerous to mention. One may sail up this beautiful stretch of water to Stockton, the Canadian Pacific terminal; to Searsport, to Belfast, to Bangor, Cape Rosier, Castine or a dozen more beauty spots where one's enjoyment is limited only by the amount of time at his disposal. Proceeding we left Cape Rosier on the port hand and rounding Little Deer Island entered the justly famous Eggemoggin Reach. One of the noticeable features of this part of the coast is the characteristic of the islands. Everything is granite. On Deer Island are some of the world's greatest quarries, and the water is so bold that one can sail within a stone's toss of the shores where there are 15 feet of water at low tide. Before leaving the Reach we passed Brooklin where the New York Yacht Club intended stopping over night but did not owing to the fact that it was a day behind its schedule.

Through Casco Passage into Blue Hill Bay and across to Bass Harbor Light is another delightful stretch of water. There is a fine anchorage at Bass Harbor, canning factories and enough to see to make a short stop pleasant. Right here is a little side jaunt that nobody who has come this far should miss. It is the sail up Somes Sound. Pass Southwest Harbor, which, by the way, is worth a brief visit. Keep right on straight through the centre of Mount Desert Island. On the starboard hand Brown's Mountains towering 880 feet above low water mark; on the port Robinson's Mountains 680 feet.

Glance carefully at your chart now. Observe the shore line. One doesn't see much dotted surface, eh? In one place there are 120 feet of water and an average of 50 to 75 feet. You can steer your craft right alongside the foot of the precipice and step off if you are so inclined without even rubbing the copper on the bottom. On the way back out of the sound there are Northeast Harbor, a stylish summer resort; Seal Harbor and any quantity of nooks and crannies all with their full quota of pleasure seekers. From now on it is simply a case of follow Mount Desert Island around into Bar Harbor where the chart, or maybe it's the Bar Harbor bluebook, tells you its the proper caper to dig out your blue serge, spotless and freshly creased white ducks, and row ashore to hobnob with the elite and forget you have been roughing it for a week.

After one gets tired of Bar Harbor, which, by the way, he is not likely to do for several days, it's a nice little run of an hour over to Sullivan Harbor where the Maine Central unloads its passengers onto the Mount Desert ferry-boat. Winter Harbor, another lively resort, is but six miles across Frenchman's Bay, and worth taking in. If one cares to he can keep on past Bar Harbor, up the bay into the Eastern Bay and Mount Desert Narrows, through the draw-bridge, at high water only, into the Western Bay, through Bartlett Narrows, and down Blue Hill Bay completely circling the island. While there are dozens of beautiful spots I have not mentioned on the Portland-Bar Harbor run and many interesting side trips, I hardly think a more interesting itinerary for a week's cruise could be arranged.

How Much Does a Motor Boat Cost?

An Announcement and A Request.

HOW much does a motor boat cost?

To answer this in true Yankee fashion we should ask, "How much do you want to pay?" You can get a motor boat for $100, and you can get one for $100,000, and you can get one at any price between. You know that. Quite so. And we don't dispute it. But, assuming that you want to buy one at $100 or at $500 or at $1,000 or more, do you know exactly what range of choice you have at the particular price you wish to pay? Do you know all the kinds of boats offered on the market at that price? Do you know just what kind and how much of a boat you can make for yourself or have made for you for $100, for $200, for $500 or for $1,000? Wouldn't you like to know just what a whole lot of other motor boatmen throughout the country have done for the sum of money you want to invest? Do you know what is obtainable—what has been obtained, in fact, by some one else—at $5,000, at $10,000, or at $100,000?

IF you think that some one else may have obtained more motor boat satisfaction for his money than you did, wouldn't you want to know exactly how he did it? If you think that you have obtained more motor boat satisfaction for your money than some one else has, wouldn't you be willing to tell him how you did it? Of course you would, for all good motor boatmen are altruistic.

WE have a plan by which we shall get together in classified form all the information that anyone, either the embryonic or the full-fledged motor boatman, could want before buying the best boat for his purpose that can be had within the possibilities of his pocketbook. And here is that plan:

BEGINNING in the May issue of MOTOR BOATING we shall run a series of twelve articles—or they might more properly be called departments—one in each issue, which will contain descriptions and illustrations of boats that can be had for $100, $200, $300, $500, $1,000, $2,000, $5,000, $10,000, $15,000, $25,000, $50,000 and $100,000—of boats that are offered on the market at those figures, or boats that have been built at them. The $100 boats will be in the May issue, the $200 boats in the June issue and so on throughout the entire range of costs.

IN carrying out this plan we want to ask for your help. You have a boat. Was she built especially for you? How much did she cost? Do you like her? What features has she that you think are especially good? Send us a good photograph of her—two or more if they are necessary to show up the good points. Send us a brief description of her. Tell us why you think she is good, how she could be made better without adding to her cost. If you can, send her lines. Tell us what she can do, what sort of an engine she has. Send this matter—the photographs, or lines, and the description—to us now, so that we may have it all ready to use in the issue which has the boats of approximately the same price. We shall group the boats which cost $100 or less, over $100 but not over $200, over $200 but not over $300 and so on. Send it to the Editor of MOTOR BOATING, 1789 Broadway (yes, we have moved), New York City, and mark it "Motor Boat Cost Series." You probably will be able to give someone else a good idea in return for the many you undoubtedly will get from the series—and we will pay for the matter that we use.

Exhibitors at The New York Motor Boat Show.

The Atlantic Company.....Amesbury, Mass.
Atwater Kent Manufacturing Co.....Philadelphia, Pa.
Apple Electric Co.....New York City
American Metal Hose Co.....New York City
American Joxyl Co.....New York City
American Ever Ready Co.....New York City

T. A. Backe.....Brooklyn, N. Y.
Bridgeport Motor Co., Inc.....Bridgeport, Conn.
Bryant and Berry.....Detroit, Mich.
The B. F. Brown Gas Engine Co.....Syracuse, N. Y.
Bosch Magneto Co.....New York City
Bruns, Kimball and Company.....New York City
Buffalo Gasolene Motor Co.....Buffalo, N. Y.

James Craig, Jr.....New York City
Clifton Motor Works.....Cincinnati, Ohio
The Commerical Acetylene Company.....New York City
Columbian Brass Foundry.....Freeport, L. I.

Gus A. Diem.....New York City
F. W. Devoe & C. T. Reynolds Co.....New York City
Detroit Boat Co.....Detroit, Mich.
C. D. Durkee and Co.....New York City
Detroit Lubricator Co.....Detroit, Mich.

Electric Storage Battery Co.....Philadelphia, Pa.
Evans Stamping and Plating Co.....Taunton, Mass.
The Electric Launch Co.....Bayonne, N. J.
Electric Speedometer & Dynamometer Mfg. Co. .....Washington, D. C.

The Fairbanks Company.....New York City
Fairbanks, Morse & Co.....Chicago, Ill.
Fox Reversible Gasoline Engine Co.....Newport, Ky.
Fulton Engine Co.....Brooklyn, N. Y.
Ferro Machinery & Foundry Co.....New York City
Fay & Bowen Engine Co.....Geneva, N. Y.

Gray-Hawley Mfg. Co.....Detroit, Mich.
Gasoline Motor Efficiency Co.....Newark, N. J.
Geiszler Bros. Storage Battery Co.....New York City
Gray Motor Co. Detroit, Mich.
Gas Engine & Power Co. & Chas. L. Seabury & Co., Cons..Morris Heights, N. Y.

Havoline Oil Co. New York City
Heinze Electric Co. Lowell, Mass.
Hendricks Novelty Co. Indianapolis, Ind.
Holmes Motor Co. West Mystic, Conn.

International Correspondence School.....New York City

S. M. Jones Co. New York City
Jencick Motor Mfg. Co. Port Chester, N. Y.
Janney, Steinmetz & Co. Philadelphia, Pa.

K. W. Ignition Co. New York City
L. O. Koven & Bro. New York City
R. L. Kenyon Co. Waukesha, Wis.
Lamb Boat & Engine Co. Clinton, Iowa
Long Bros. Kokomo, N. Y.
Lackawanna Mfg. Co. Newburgh, N. Y.

Mianus Motor Works.....Mianus, Conn.
C. D. Mower.....Boston, Mass.
August Mietz.....New York City
Hector MacRae.....Baltimore, Md.
Chas. E. Miller.....New York City
Mechanical Devices Co.....Watervliet, N. Y.
Matthews Boat Co.....Port Clinton, Ohio
Mercury Motor Co.....New York City
McCord Mfg. Co.....Oetroit, Mich.
A. S. Morss Co.....Boston, Mass.
W. H. Mullins Co.....Salem, Ohio
Motsinger Device Co.....Pendleton, Ind.
Murray and Tregurtha Co.....South Boston, Mass.
Chas. P. McClellan.....Fall River, Mass.

N. Y. Yacht, Launch & Engine Co.....Morris Heights, N. Y.
N. Y. Sports Goods Co.....New York City
National Carbon Co.....Cleveland, O.
New York Coil Co.....New York City

Palmer Bros.....Cos Cob, Conn.
Progressive Mfg. Co.....Torrington, Conn.

Richardson Engineering Co.....Hartford, Conn.
C. F. Roper & Co.....Hopedale, Mass.
Royal Engine Co.....Bridgeport, Conn.
Paul S. Reeves & Son.....Philadelphia, Pa.
Racine Boat Mfg. Co.....Muskegon, Mich.
Rose Mfg. Co.....Philadelphia, Pa.

Snow & Petrelli Mfg. Co.....New Haven ,Conn.
Stamford Motor Co.....Stamford, Conn.
Standard Motor Construction Co.....Jersey City, N. J.
H. C. Squire's Sons.....New York City
The Stanley Company.....Boston, Mass.
Sterling Engine Co.....Buffalo, N. Y.
Scripps Motor Co.....Detroit, Mich.
Stanley & Patterson.....New York City

Trenton Engine Co.....Trenton, N. J.
Thrall Motor Co. Detroit, Mich.
Turbine Auxiliary Muffler Co.....New York City
Toppan Boat Mfg. Co. Boston, Mass.
W. & J. Tiebout New York City
Truscott Boat Mfg. Co. St. Joseph, Mich.
D. M. Tuttle Co. Canastota, N. Y.

Union Battery Co. Belleville, N. J.

Valentine & Co. New York City
Vim Motor Mfg. Co. Sandusky, O.

Wolverine Motor Works Bridgeport, Conn.
Whitlock Coil Pipe Co. Hartford, Conn.
E. J. Willis Co. New York City
Watres Mfg. Co. New York City
Wheeler & Schebler Indianapolis, Ind.
Welin Davit & Lane & De Groot Co....New York City
M. M. Whitaker New York City
Wolverine Motor Works, Inc.....Bridgeport, Conn.

The Yankee Co. Utica, N. Y.

A glimpse of Madison Square Garden where the show is held

MAR. 1910

What the New York Show Offers.

[On the following pages—9 to 16 inclusive—appear descriptions of exhibits at the New York Show and illustrations of new boats, motors and accessories which are to be seen in Madison Square Garden during the week of the show. On the opposite page is the list of exhibitors. We shall supplement this forecast with material gathered at the show, and our readers will find in either this or the next following issue descriptions of all the new things which the first motor boat exhibition of the year disclosed.—The Editor.]

Detroit Boat Co., Detroit, Mich. The space taken by this company is twice as large as it has ever been in the past and the exhibit will comprise about 16 different types of boats, ranging in size from the 14-foot yacht tender and fisherman's boat to the 35-foot express boat and 35-foot flush deck cabin cruiser. The feature of this company's exhibit, besides their well-known Bluebird, will be a new 34-foot cruiser. In this boat have been included all the conveniences found in the larger cruising yachts. It is equipped with a 20 horsepower, two cylinder heavy duty Detroit motor with a number three Detroit gear and clutch, and develops a speed of from 9½ to 10 miles per hour.

A 35-foot Elco Express launch.

25 H. P., 36-foot cruiser of the Racine Boat Mfg. Co.

The general dimensions of this boat are length over all 34 feet 6 inches, beam 8 feet 6 inches and draft 30 inches.

Gas Engine and Power Co., and Chas. L. Seabury & Co., Incorporated, Morris Heights, New York. This company will exhibit a 25-foot yacht tender, a 30-foot runabout, a 45-foot sea-going runabout and a 42-foot cruising launch, besides a full line of the Speedway motors manufactured by them. The 25-footer is of the carvel construction and the interior finish, as well as the planking, is of mahogany. The motor, a four-cylinder, four-cycle Speedway is located forward under hinged covers. The 30-foot runabout illustrated herewith is of the regular stock type. The 45-foot sea-going runabout is equipped with a six cylinder, six by six Speedway motor, and arranged for one man control. The 42-foot cruiser is equippel with a 40 horsepower Speedway and is notable in that the interior space with the exception of the toilet room forward, has been thrown into one large saloon, instead of being cut up into small compartments, and all the latest fixtures have been included in its equipment.

The Electric Launch Co., Bayonne, New Jersey. The accompanying illustration is of the 35-foot Elco gasoline express launch, which will be one of the features of this company's exhibit at the coming show. This boat, while not a racing machine, as it embodies both comfort and safety, has a very creditable speed of 22 miles per hour. It is equipped with a 60 horsepower, six cylinder motor, located under the forward deck. Besides their popular high speed yacht tenders there will be on exhibition a 40-foot Elco cabin cruiser of 16-20 horsepower, and a 26-foot Elco electric launch, which was designed for use on lakes and rivers. This boat, because of the absence of noise, heat and odor, and because of the ease of operation, is an ideal family boat, and it is claimed that with the larger battery equipment, 50 miles can be covered on one charge.

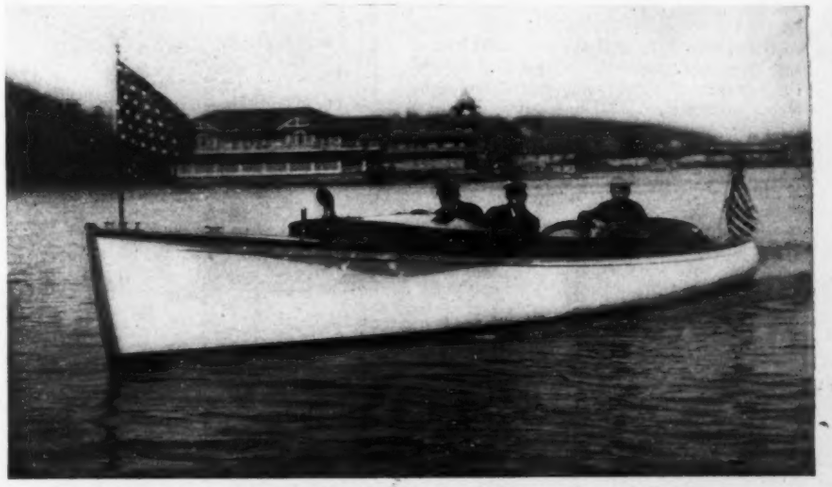
Standard Motor Construction Co., Jersey City, New Jersey. This company will exhibit a number of their well-known standard engines, including 8, 12, 16, 25 and 40 horsepower slow speed motors, a 25 horsepower high speed motor, a 60 horsepower of the high speed type, and one of the latest 100 horsepower reversible motors. There will also be on exhibition an ideal 40-foot cruiser, equipped with one of the new 16-20 horsepower engines of the type shown in the accompanying illustration. Heather, winner of the Bermuda Cup, was equipped with Standard engines and the cup will be on exhibition by the Standard Company.

Racine Boat Mfg. Co., Muskegon, Mich. The exhibit of this company will consist of a number of their 1910 boats and motors of various sizes and styles. The largest and most prominent will be the 36 foot combination raised deck and trunk cabin cruiser, an illustration of which is shown herewith. This boat is equipped with a 25 horsepower, four cylinder, four cycle motor and develops a speed of ten miles per hour. The interior arrangement is divided into forward cabin, main saloon, engine room, toilet room and galley. The 28 foot raised deck cruiser also exhibited will be of the same general design as that built last year. Besides their little 16-foot dory, a new 25-foot speed boat, as shown in the accompanying illustration, will also be exhibited. This boat is equipped with a 12 horsepower motor and while designed for all-round use, maintains a speed of 18 miles per hour.

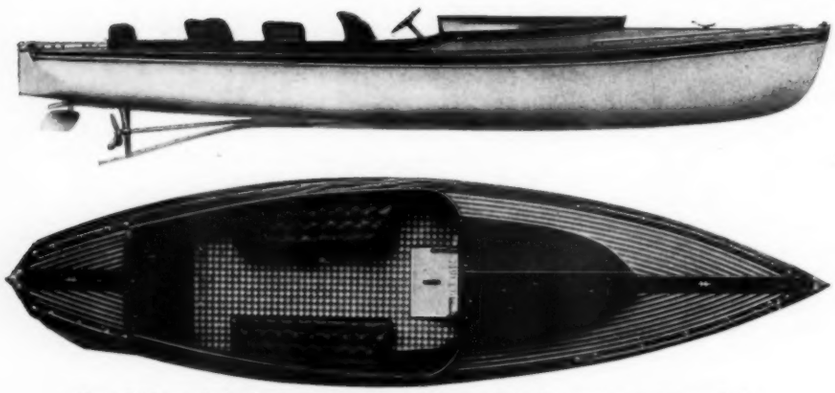
The Atlantic Company, Amesbury, Mass. Three boats will be shown in this company's exhibit, including the 25½ foot Gurnet Dory,

Racine Boat Mfg. Company's new 25-foot speed boat.

equipped with an 8 horse power Atlantic Engine, a 20½ Gurnet equipped with a 5 horse power Atlantic and an 18½ foot Gurnet with a 4 horse power Atlantic engine installed. These boats will all be completely equipped and in addition to these exhibits of dories,



30-foot runabout shown by the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated.



Broadside and deck views showing different interior arrangements of the 26-foot Mullins pressed steel boats.

the company will show one of the 25 foot semi-speed Clipper Launches and a 25 foot speed boat rated at 21½ miles with a late model four cycle, six cylinder, light weight engine installed. This latter engine has never before been shown by the company and it appears under their announcement as the "Re-

The 26-foot Mullins doing 18.75 miles per hour on the Potomac in a Government test.

villion Light Six-Thirty." The equipment consists of a Remy Magneto with double ignition, Schebler Carbureter and automobile control. This exhibit has been planned as a complete surprise and is expected to attract a great deal of attention.

The W. H. Mullins Co., Salem, Ohio, will exhibit several of their pressed steel motor boats as follows: A 26-foot automobile boat, a 20 foot automobile boat; the 18-foot Leader; an 18-foot special launch; and a 16-foot special launch. Shown herewith are a broadside view of the 26-footer, and a deck view of the same model with somewhat different interior arrangements. This boat is equipped with a 40 horsepower, four cylinder, two cycle reversible engine, Mullins silent under-water exhaust, automobile steering wheel, rear starting device, automatic float-feed carbureter, and a number of other special features. The other models are similar in construction and finish and their design and power correspond to the services for which they were designed. A full line of Kenyon tops and life preserving cushions, fenders, etc., will also be on exhibition.

Fay & Bowen Engine Co., Geneva, New York. The exhibit of this company will include a three cylinder, 17 horsepower motor with Paragon clutch, a 30 horsepower, two cylinder heavy duty engine of the cenvertible kerosene-gasoline type, a five horsepower single cylinder engine, a five horsepower double cylinder engine and two completely equipped launches. The smaller of these, the 21-footer is the standard family boat and is equipped with five horsepower engine. The larger one is known as the 25-foot special, with 10 horsepower, two cylinder engine. An interior view of this boat is shown herewith; it is an example throughout of the best workmanship, materials and finish and has many new and interesting features.

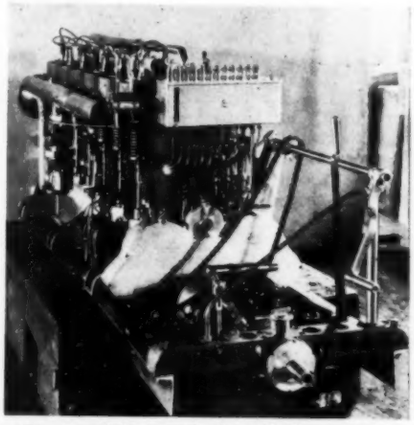
Truscott Boat Manufacturing Company, St. Joseph, Michigan. In this exhibit will be shown a complete line of Truscott boats and motors of several different sizes. A special feature is being made of a roomy 35-foot cruiser, having a beam of 9 feet. There are two sleeping compartments in this craft and exceptional locker and wardrobe space is provided. There is space in the cockpit for four or five rattan chairs in addition to the thwart seat with a high back. A 21 horsepower, four cycle, four cylinder Truscott motor is installed, having dual high tension magneto ignition and mechanical oiler. The boat is finished in mahogany and white enamel throughout, is equipped for salt water cruising, and the control of both boat and motor is in the hands of one man. The company is making a specially low price, based on the construction of no less than ten of these boats exactly alike for 1910 delivery.

The Matthews Company, Port Clinton, Ohio. This company will show a line of the well-known Matthews craft, the principal exhibits including a 26-foot boat equipped with a 17 horsepower, three cylinder, two cycle motor, having a speed of 13½ miles per hour; a 26-foot boat equipped with a 40 horsepower, four cylinder, four cycle motor with high tension magneto, having a speed of 18 miles an hour; and a 30-foot boat equipped with a 40 horsepower, four cylinder, four cycle motor with a high tension magneto, having a speed of 19 miles per hour. These boats are all of the runabout type and the company are preparing to build one hundred of them and are making a special price for that reason.

Interior arrangement of the 25-foot Fay & Bowen Special.

Gray Motor Company, Detroit, Michigan. The exhibit of this company will consist of a 3, 4, 6, and 10 horse power single cylinder, a 6, 8, 12, and 20 horse power double cylinder, in two models and 21 and 36 horse power, three cylinder engines. The three cylinder models have a number of features which are entirely new and are designed especially for the three cylinder type. These engines are of the combination two and three port type with the cylinders as closely coupled as possible. Cylinder heads are removable and lubrication is secured through the gasolene supply. These engines are designed so that they can be disassembled without removing any gasolene water or exhaust connections. The company also have an exhibit of their clutch which is made in their own plant.

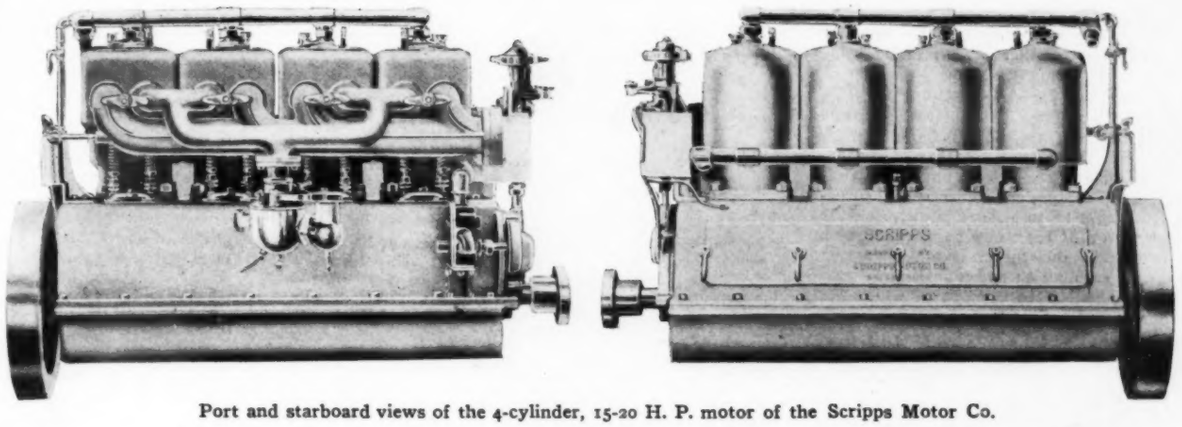
Wolverine Motor Works, Bridgeport, Conn. The exhibit of this company will comprise representatives of their extensive line of marine motors, including a 5 horsepower single cylinder, a 12 horsepower, double cylinder and an 18, a 36 and a 50 horsepower, three cylinder. The Wolverine motors are among the very few that are equally well adapted to either kerosene or gasoline and they have been brought to such a high state of efficiency that but few changes have been made in the 1910 product. The Wolverine Company has always been an exponent of the four cycle type of marine engine and all of the motors on exhibition will be of this type. The remainder of the exhibit will consist of a complete line of fittings and accessories for the Wolverine engines.



The Jencick type C six-cylinder motor.

Jencick Motor Mfg. Co., Port Chester, New York. This company will exhibit several of their standard engines, including a type B, four cylinder, a type C, six cylinder, a type D, four cylinder and a type D, eight cylinder. The eight cylinder motor was designed primarily for racing and although of 7½ inches stroke and 7½ inches bore weighs complete but 2,400 pounds. The type B 4, is the one adopted by the Thousand Island Yacht Club for their new one design boats, to be brought out this season. The C 6 is known as the Auto Racing type for high speed runabouts and the D 4 is intended for yachts and cruisers. Each of the above outfits is complete in every detail and warranted for two years. The accompanying illustration is of the six cylinder type C, motor.

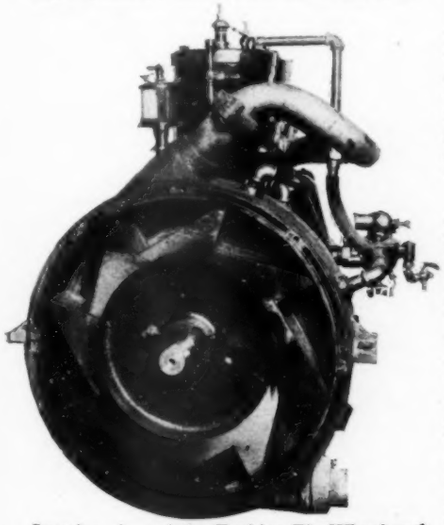
The Bridgeport Motor Company, Inc. Bridgeport, Conn. The exhibit of this company will be found in Section "P" and comprises a complete line of Bridgeport Motors in single cylinder models from 2½ to 9 horse power, double cylinder from 5 to 18 horse power and a 27 horse power engine in a three



Port and starboard views of the 4-cylinder, 15-20 H. P. motor of the Scripps Motor Co.

cylinder model. Two new models are shown in the semi speed type—one a two cylinder, 8 to 10 horse power, one a three cylinder 12 to 16 hose power. Cylinder heads are detachable and two extra large hand hole plates are provided in the base of each cylinder, to permit ease of inspection of the lower bearings of the connecting rods, or their removal. In the multiple cylinder models, cylinders are cast separately and are provided with automatic pressure feed oilers.

Scripps Motor Company, Detroit, Mich. The exhibit of this company will include a full line of motors, ranging from 4-5 H.P. in single cylinder models to 6 cylinder, 100 H.P. racing machines; the line includes motors for every service from the sixteen foot launch to the 70 foot cruiser or high speed racer. Two heavy duty types are on exhibition, a single cylinder, 7 horse power and a two cylinder 12-15 horse power while for medium duty they have a four and a six cylinder model. The latter are designed to give maximum power at high speed. Two views of their four cylinder, 15-20 horse power model are shown in the accompanying cut. The exhibit will be in charge of the company's New York representative, H. G. Diefendorf of 30 Church Street.



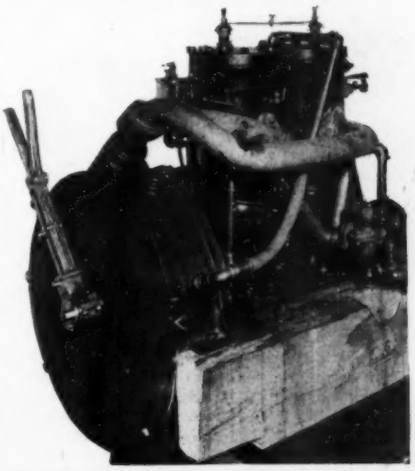
Interior view of the Turbine Fly Wheel and Muffler.

Turbine Auxiliary Muffler Company, Inc. 130 Pearl Street, New York. This company is showing an interesting combination of the Turbine Fly Wheel and Muffler in which the excess forces heretofore blown out through the cylinder exhaust, are utilized and at the same time, all back pressure is eliminated. We show herewith two photographs which give a good general idea of the process. It is claimed that the Turbine Blades in motion receive the exhaust gases with less abruptness than when they strike the atmosphere direct or through the ordinary expansion chamber and that the gases are expelled at a lower and at the same time more uniform, pressure, thus, almost entirely eliminating noise. The Turbine Fly Wheel is encased and therefore does not throw any bilge water or oil.

Mercury Motor Company, New York. In the exhibit of this company may be seen the noted 25-footer Gunfire II which has so many records and victories to her credit and which is equipped with a 30 horsepower Mercury motor. Six engines will also be on exhibition as follows: a 6 horsepower single cylinder 4½ x 4½ inches, a 14 horsepower, two cylinder, 4½ x 5 inches; a 25 horsepower, two cylinder, 4½ x 5 inches, a 30-35 horsepower, 4 cylinder, 4¾ x 5 inches, a 60 horsepower, 4 cylinder, 6 x 6½ inches and a 100 horsepower, 6 cylinder, 6⅛ x 6½ inches. All of these motors are of the four cycle type.

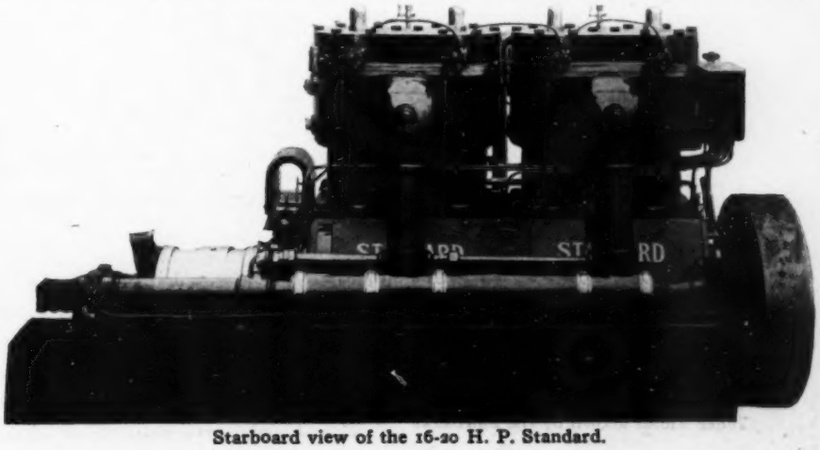
Charles D. Mower, New York City, the well known designer of many prominent motor boats, will have on exhibition in the space of the Jencick Motor Company, the model of the new Thousand Islands One Design Runabouts. Twenty of these boats have been subscribed for and will be built to Mr. Mower's designs and delivered to the Thousand Island Yacht Club, this coming season.

Holmes Motor Co., West Mystic, Ct. The exhibit of this company will consist of three models, a 25 H.P., four cylinder, a 38 H.P., six cylinder and a 90 H.P., six cylinder. The 38 H.P. engine is the one that has been adopted exclusively by the U. S. Life Saving Service for use in their 36-foot life boat. A feature of these engines is the reverse gear which is placed on an extension base next to the flywheel which is upon the rear end of the motor. A force feed lubricator is placed directly above the flywheel and is driven by an upright shaft. Motors are equipped with a Bosch magneto npon the forward end and two of the models have open bases, giving accessibility at all times. If desired, these open bases can be entirely closed, with a pan under the bottom, giving a very compact and neat appearance. Great flexibility is obtained by means of a long stroke piston.



The Turbine Auxiliary Muffler as it appears with starting crank attached.

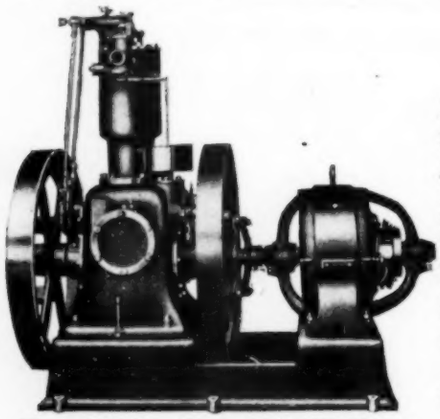
S. M. Jones, Toledo, Ohio. This company will have on exhibition a large line of Ralaco four cycle engines, one of which, a 20 H.P., four cylinder model, will be in operation. These engines are shown in six sizes in both two and four cylinder models, the two cylinder being of 8-10, 12-15 and 23-25 horsepower and the four cylinder models of 15-20, 25-30 and 45-50 horsepower. All the cylinders are cast separately and the regular ignition equipment, except on the 25 and 50 horsepower models, is of the jump spark type, using one coil in connection with a distributor. Other ignition equipments are, however, provided if the purchaser so desires. Lubrication is of the splash system and in all sizes except the 10 and 15 horsepower, an oil pump of the plunger type is located in the after end of the base to trans-



Starboard view of the 16-20 H. P. Standard.

fer the oil to the forward compartment through a glass so located that the operator may easily tell whether or not oil is being supplied to the pump.

Vim Motor Manufacturing Company, Sandusky, Ohio. The most interesting model exhibited by this company, will be an entirely new design of two stroke motor which is expected to eliminate all objectionable features of high speed motors, and which is said to deliver from 25% to 50% more power than the average motor of the same bore and stroke. The feature of this motor is a combination of a double carburetion and a fuel intake system with a double intake port, in which the secondary ports are greater in area than the primary. The principle does not necessitate any additional working parts although the

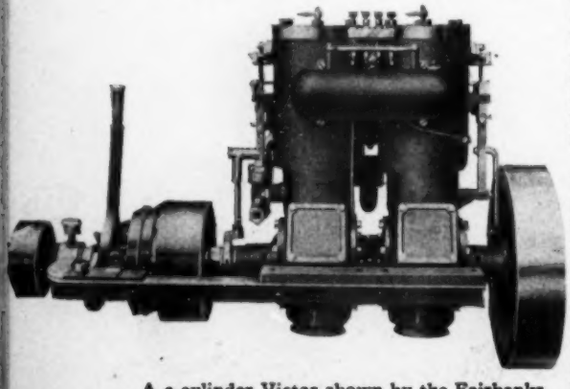


The Fairbanks Company's Electric Lighting Outfit.

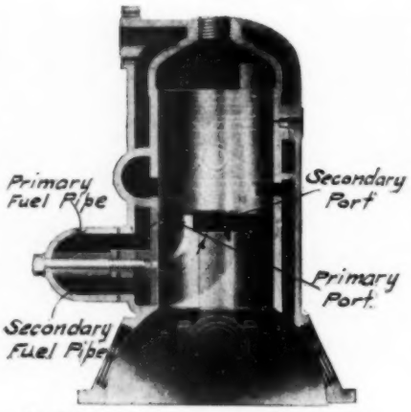
motor will run at from 1300 to 1400 revolutions a minute and still allow a sufficient amount of fuel to be sucked into the base. These high speed motors are built primarily for hard service such as is required upon racing boats.

The Fairbanks Company, New York, will exhibit two marine engines of the Victor line, manufactured by them, one a single cylinder, and the other a two cylinder engine of the type shown in one of the accompanying illustrations. The electric lighting outfit also shown herewith will be on exhibition. This outfit is made in several sizes for use on the larger cruisers, and the one on exhibition will be of the eight horsepower type. It will furnish the current for the company's sign in connection with their exhibit. The switchboard is so arranged that several different loads may be thrown in or out at the will of the operator.

Fulton Engine Company, 37-41 Gold Street, Brooklyn, N. Y. Both the Fulton and Kent line of engines will be exhibited by this company. The former is of the two cycle type and has been on the market for about 6 years. These are exhibited in single cylinder sizes from 2½ to 7½ horse-power and in double cylinder, from 6 to 15 horse-power.



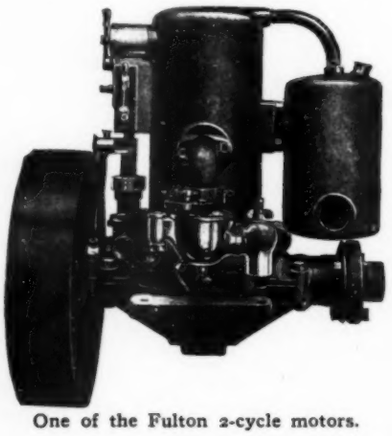
A 2-cylinder Victor shown by the Fairbanks Company.



Sectional view of the new Vim motor.

As has been the custom in former years, the exhibit will also include a complete line of parts, sectional castings, etc. The Kent Engine, which is also exhibited, is manufactured by the Kent Machine Works of 39-41 Gold Street, Brooklyn, and made its first appearance on the market at the last Motor Boat Show held at Madison Square Garden in 1909. This engine was built to meet the demand for a heavy duty motor of four cycle type and is made in five sizes of 2, 4 and 6 cylinder types. A medium duty type in four and six cylinder models is also made.

Fairbanks, Morse & Co., Inc., Chicago, Ill. A complete line of two cycle engines will be exhibited by this company. A number of new features have been added to the 1910 models, which include the split-base design with a large hand hole in the base of each

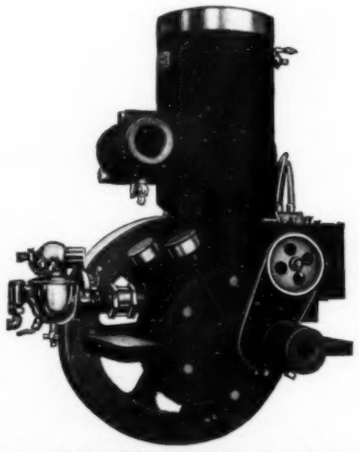


One of the Fulton 2-cycle motors.

cylinder; cylinders water jacketed to the bottom of each, improved piston rings and connecting rods, etc. A circulating pump of rotary gear type is supplied with each engine, and timers are of the roller contact type with a handle provided with a push button circuit-breaker so that the engine may be readily reversed by means of the spark. A positive pressure oiling system with sight feed for each cylinder is a part of the regular equipment of these engines. Corrugations on the inside of the fly wheel furnish a firm hand hold so that no starting crank is necessary, thus eliminating the danger from a back kick.

The Progressive Manufacturing Company, Torrington, Conn. The exhibit of this company will consist of a full line of Eagle Engines, having make and break spark and equipped with a new device which requires no adjustment. There are twelve models of this engine including two combination models which are made in either make and break or jump spark; these latter are designed to run at a higher number of revolutions than the others, which are more especially built for heavy duty, and all are of the two-cycle, two port construction. The Eagle line of engines for 1910 offers more models than heretofore ranging from 1½ horse power single cylinder, to 25 horse power, four cylinder. In addition to the engines, there will be exhibited a complete line of necessary fittings such as propeller wheels and an improved 1910, model reverse gear.

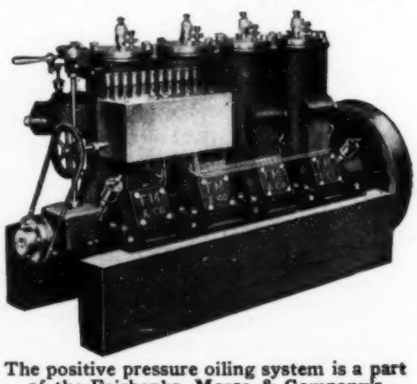
Mianus Motor Works, Mianus, Conn. This company will show a sample motor of each of the following sizes: 3, 5 and 7½ horse power in single cylinder models, and 6, 10 and 15 in double cylinder models. All of these motors are equipped with Standard Mianus features, such as water cooled exhausts, water jacketed cylinder heads, oil ring system for lubrication and detachable make-and-break igniter with adjustable contacts. Some of these motors will be equipped with special 1910 features such as a direct connected low tension make and break magneto system, making the motor independent of batteries and spark coil. The 1910 features will also include a mechanical oiling system. We show herewith a photograph of one of the smaller engines of the single cylinder type.



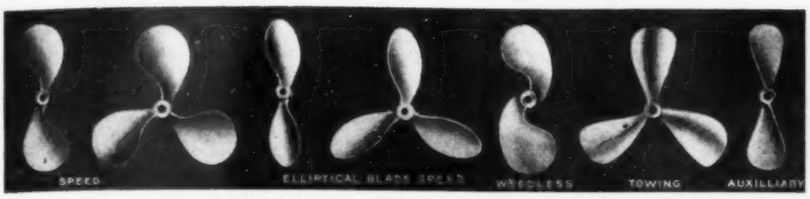
Single cylinder Mianus equipped with mechanical oiler.

C. F. Roper & Co., Hopedale, Mass. The exhibit of this company will be shown by H. C. Squire's Sons, and will include a complete line of the 1910 Roper Safety Propeller including a new solid speed wheel with a safety coupler. A bow control device can be used in connection with this propeller which operates in principle, the same as the regular equipment. The only difference in the construction lies in the manner in which the throw of the reverse lever is communicated to the reversing sleeve. The new solid wheel with the safety coupler has an adjustment which may be set at a given limit, so that in striking a rock or other obstruction, the propeller will be immediately tripped and the shaft will be releasd from the engine.

Columbian Brass Foundry, Freeport, L. I. New York. In Space E on the main floor, this company will have on exhibition a full line of the well-known Manganese Bronze

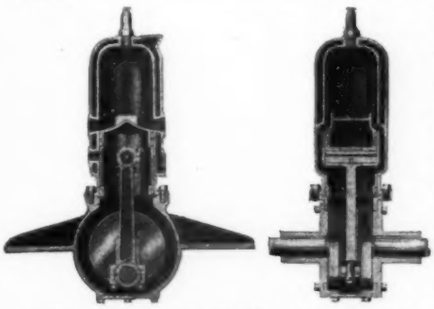


The positive pressure oiling system is a part of the Fairbanks, Morse & Company's equipment.



The standard types of Columbian Speed Propellers.

Columbian Speed Propellers, in all sizes, from the 10 inch two bladed, to the 36 inch, three bladed wheel. This company, while best known for its propellers, produces Stuffing Boxes, Stern Bearings and Manganese Bronze Struts, Rudders, Cut waters, etc., and a full line of these fixtures will be on exhibition. An interesting feature of this exhibit, will be the pictures of several of the great American champions which made their records with



Sectional view of the Tuttle motor showing double port intake and exhaust.

Columbian propellers, together with fac-similes of the propellers used on each. The accompanying illustration shows the Standard types of the Columbian propellers.

D. M. Tuttle Co., Canastota, N. Y. The principal feature of the exhibit of this company will be an improved type of the two cycle engine which is said to entirely overcome the objections of the ordinary two cycle type; namely, the lack of speed and slight waste of fuel which escapes with the exhaust. As can be seen in the accompanying illustration, the double inlet and exhaust ports are diametrically opposed to each other and the two inlet ports are connected to the base of the engine by individual by-passes. The double exhaust ports make a quick and even exhaust with a resulting absence of vibration. A feature of the engine is the fact that it can be run at a very low speed with no danger of choking up or stopping. Two and four cylinder models of this engine will be exhibited, as well as a number of the standard styles made by this company.

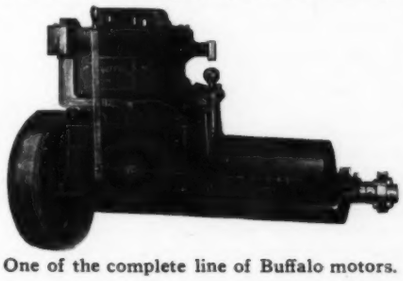
Stanley & Patterson, 23 Murray Street, 27 Warren Street, New York. This company, the makers of the well known Patterson Wireless Dry Battery System, will have a complete exhibit of their product including combination outfits of various kinds. A new and very useful outfit made practical since the introduction

The new Richardson 6-in. arc searchlight.

of Tungsten lamps, consists of twelve batteries connected in three sets of four in multiple series. This set has a switching device so that any of the batteries may be cut out if they become weak. Three sailing lights equipped with special Tungsten lamps furnished by the company, will run for seventy five hours on one set of the batteries. The new lamps which are used in this system, consume only 9/10 Watt instead of four Watts as in the old style. The "Strip" type holders are also shown and are very useful on motor boats in case there is not room for the Standard battery box. These are made of moulded rubber and have an automatic bridging device which makes a water-proof head piece, for all of the terminals.

The Whitlock Coil Pipe Co., Hartford, Conn. The exhibit of this company will consist of a full line of Manganese Bronze Castings, etc., together with engine piping of various kinds for both water and gas.

Buffalo Gasolene Motor Company, Buffalo, N. Y. The exhibit of this company will include two models of the regular Buffalo Reversing Engines of 3 horse power and 10 horse power, two models of the heavy duty type of 12 and 24 horse power respectively, two models of the high speed type, of 25 and 90 horse power, respectively and the new 225 horse power, V type which did not arrive in time to be exhibited at the recent Boston Show. In addition to these will be shown the 3 horse power combination outfits, designed especially for use upon large yachts and consisting of a 3 horse power engine with a direct connected generator on one end and

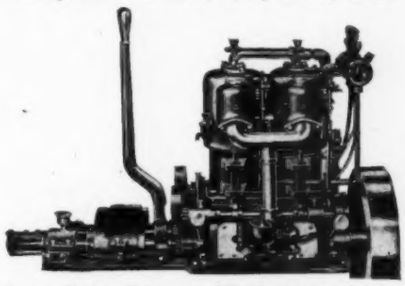


One of the complete line of Buffalo motors.

a two plunger pump on the other. One of these cylinders is for water and the other for air but if desired, both plungers can be arranged to pump water, a feature which would be much appreciated on shipboard.

Richardson Engineering Company, 107 Liberty Street, N. Y. This company will have a complete lighting outfit installed upon the Racine Boat Manufacturing Co.'s boat, "Racine." We show herewith photographs of their new six inch Arc Searchlight and a charging box, the latter of which has all the instruments and apparatus of the regular switchboard put into a fool-proof box. A generator, storage battery, Tungsten lamps, wire fixtures, etc., will also be shown. The six inch searchlight is a small edition of the seven inch light, made by the same company, and is placed upon the market in order to supply the demand for a good searchlight for small boats but which would be at the same time, large enough for many cruising boats. These lamps are built lighter than the others but have the Standard shunt feed type of arc mechanism. The mirror is five inches in diameter and the lamp will throw a strong white beam of light from ¼ to ½ of a mile. The remainder of their exhibit covers almost everything in the electrical line required for marine purposes, including generating units, storage batteries, switchboards, ship telegraphs, marine fixtures, dome lamps etc.

Palmer Bros., Cos Cob, Conn. This company will show a line of both two and four cycle motors, the two cycle ranging from 1½ to 14 horse power and the four cycle from 3 to 30 horse power. Both make-and-break and jump spark ignition are employed, the latter using the new Palmer Roller Timer. A new detachable make-and-break sparker is being used upon models K, S, T, U, and R, which



A 4-cylinder Palmer with reverse gear on engine bed.

is said to overcome the fault common to make-and-break sparkers of not being able to work quickly enough at high speed. A simple device for regulating the timer according to the speed of the motor, is a small lever on the left of the sparker which can be moved slightly to change the time of the contact. This sparker can be removed for inspection or repairs in a short time by unscrewing two bolts.

McCord Mfg. Co. Detroit, Mich. This company will exhibit the McCord force feed lubricator as adapted to marine engine service and a full line of the McKim Copper Asbestos Gaskets. The features of the McCord Lubricator are constant sight feed, mechanical drive through a belt, gears or ratchet, and a positive delivery of oil under all conditions. The oiler is entirely automatic, starting, stopping and changing speeds with the engine and it is claimed for it that there is always enough oil fed but never too much. This form of oiler is used upon the well known Speedway and Standard engines.

Hector MacRae, 316 St. Paul Street, Baltimore, Md. The exhibit of this company will include the well known "Champion" Accumulator in portable sizes for ignition only and a complete equipment for electric lighting and ignition, demonstrated in operation. For ignition purposes, a different demand is made from that required in ordinary work and the Accumulators must therefore have a high capacity and a low rate of discharge. The Champion has thick plates and a large amount of active material. Tungsten lamps make possible the use of low voltages and with the use of these but six volts are required for lighting purposes, on boats up to fifty feet in length. The cells of the accumulators are made of large size which reduces the cost of operation. All fittings are of polished copper and the new Champion Cutout is used.

Charging box shown by the Richardson Engineering Company.

Electric Storage Battery Company, Philadelphia, Pa. This company will exhibit a line of their Low Reading Pocket Voltmeters as shown in the accompanying cut, Chloride accumulators, Tudor accumulators, and Exide Batteries. The small pocket voltmeter is calculated to meet all the service requirements of the larger instruments, is of the watch case type heavily nickel plated, and of rigid construction. The mechanism is similar to that used in the high priced voltmeters and is manufactured especially for this company by the Weston Electrical Instrument Company. Each instrument is furnished in a small aluminum carrying case measuring about 3⅛ inches square and one inch thick and weighs, with the case about 11 ounces. The scale reads from 2/10 of a volt to 2 8/10 volts with indicated divisions showing 1/10 volt, although the divisions are of such width that readings to .02 volt can be readily integrated.

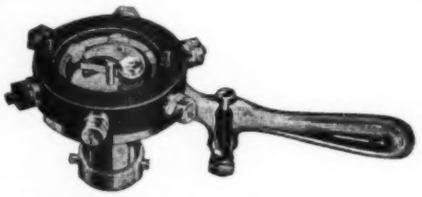
The Snow & Petrelli Mfg. Co., New Haven, Conn. This company manufactures the popular Joe's improved marine reversing gears and one way clutches and a number of other marine specialties, and will have a complete line of their product on exhibition. One of the gears will be arranged to be run by electricity and in such a manner as to show the operation of all the working parts. Joe's reversing gear is a new and original device with many advantages in its favor. There are but three gears in its construction, none of

Pocket voltmeter exhibited by the Electric Storage Battery Company.

which revolves faster than the motor speed. Motion is transmitted to the gears through a powerful eccentric in such a manner as to bring a uniform strain on all the gears.

Long Brothers, Kokomo, Ind. A full line of marine and automobile timers and circuit breakers in thirty-seven styles, will be on exhibition. The accompanying illustration is of the Marine Timer No. 1, produced by this company. The construction is along the same lines as their well-known Auto Timer, having one piece solid brass base and handle, brass cover, hard rubber push-button for circuit breaker with insulated bushing, insuring safety and reliability. Besides the timers and circuit breakers, there will be on exhibition a line of the Long Brothers' mica and porcelain spark plugs, their coil muffler and cut-out, and a number of other marine accessories.

Watres Manufacturing Company, New York City. Representatives of the complete line of carbureters, whistles, switches, funnels, etc., manufactured by this company, will be on exhibition. The Duryea Carbureter, it is claimed, is the only one in which the flow of gasoline is automatically adjusted to the speed of the engine. This adjustment, by raising



Long Brothers' 6-cylinder marine timer.

the auxiliary air port, increases or decreases the flow of gasoline, keeping the amount admitted, always in direct proportion to the speed. The Watres Switch is a double pole, double throw, rotary device, so arranged as to make immediately available any one of the sources of current. The Watres Whistle is connected to the engine by a special relief vent, the opening in which is less than 1/100 of an inch in diameter and it is claimed that with its use there is not the slightest interference with the efficiency of the engine.

The Electric Speedometer and Dynamometer Manufacturing Company, Washington, D. C. In spaces 49 and 50, this company will have on exhibition, the Hopkins Gasoline Engine Techometer and Dynamometer known as the Dynatak. This device puts the operator in complete touch with the power plant as it shows the following: the best adjustment for the carbureter when the engine is running idle or under load; performance of separate cylinders, with means of matching them against each other; failure of any cylinder to fire; the occasional miss in firing; and the performance of the combined cylinders. By simply turning a switch, the speedometer indicates the speed of the engine besides odometer magneto record.

The Commercial Acetylene Company, New York, will occupy Space 5 and will exhibit and demonstrate their acetylene safety storage system for use in lighting motor boats. The exhibit will consist of two tanks with high pressure equipment, various styles of brackets, glassware and a search light. It is a notable fact that this acetylene lighting system will be demonstrated at the Garden and this fact, considering the strict fire regulations, is a good recommendation for the safety of the system. Shown herewith are a plan and elevation of a motor boat, showing the method of installation of this lighting and storage system.

Paul S. Reeves & Son, 1415-25 Catherine Street, Philadelphia, Pa. This company will exhibit a miscellaneous line of brass bronze and phosphor bronze castings such as motor bearings, white brass bearings, propeller wheels, made of Reeves' "Tubal" Manganese Bronze, Babbitt metals, brass, bronze and phosphor bronze inguts, phosphor copper alloys etc. They will also exhibit rolled phosphor bronze in wire, rod, sheet and strip form and phosphor bronze wire tiller rope as well as transmission cases and gear cases made of Government and Manganese bronze and clutches, break handles and levers of Manganese Bronze. A special feature is being made of their propellers built of Reeves' "Tubal" Manganese Bronze which are used in the U. S. Navy and on large merchants' steamers. The tensile strength of this bronze is given as from 65000 to 75000 pounds to the square inch.

C. D. Durkee and Company, 2 and 3 South Street, New York will occupy double the space they have used at previous shows. They will have on exhibition an elaborate display of motor boat fittings, pumps, lanterns, binnacles, compasses, etc. adapted for use on all sizes of boats from the motor canoe to the ocean going cruiser. There will be a number of different types of steering gears in all sizes, the larger ones having a combination binnacle and compass incorporated. A full line of the J. H. Curtis Company marine plumbing fixtures will be included in this exhibit, besides pneumatic and cork cushions, mattresses and life preservers. The New Durkee pump shown in the accompanying illustration is an improvement on the old style hand pump, as with it may be reached the most inaccessible places without the usual discomfort.

C. D. Durkee & Company's improved bilge pump.

Wheeler & Schebler, Indianapolis, Ind. The exhibit of this company, on space 51, will be confined solely to the Schebler Carbureters and the five models for 1910, D, E, F, L and H will be on exhibition. It is claimed that these carbureters overcome the common difficulty of securing a uniform mixture of gas and air at different engine speeds. When the motor is running at its minimum speed, the air is drawn through an aperture of fixed dimensions; as the speed is increased and consequently the flow of gasoline becomes greater, more air is required and this additional supply is furnished by the compensating air valve which opens more and more as the speed of the engine increases. The compensating air valve, when once adjusted, admits a regulated supply of air, in accordance with the degree of vacuum produced by the piston of the motor. The illustration herewith is of the Model L.

Motsinger Device Mfg. Co., Pendleton, Ind. The accompanying illustration shows the new Motsinger magneto, which will be a feature of this company's exhibit. This magneto is for make and brake spark only. It will run in either direction and produce, at about 1600 R. P. M., from 12 to 13 volts and from 1 to 2½ amperes. It can be used with any make and brake-coil and is fitted with a positive governor which maintains its speed at a constant rate, regardless of the size or speed variation of the fly wheel from which it is

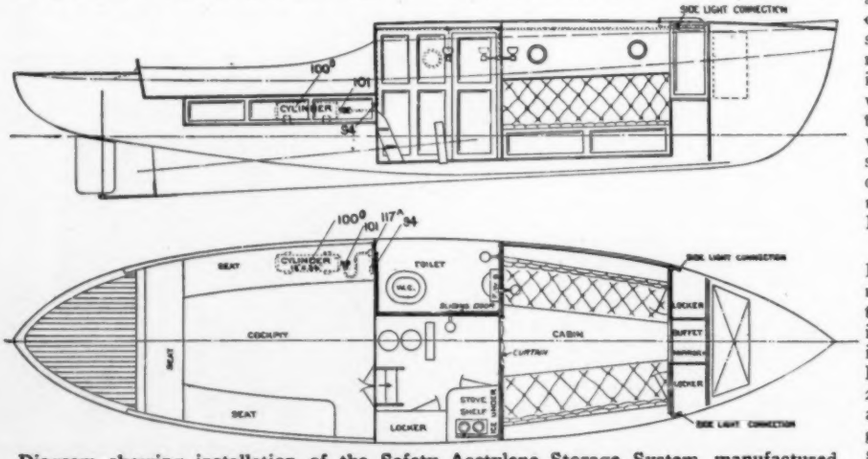
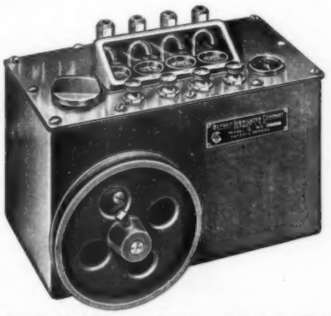


Diagram showing installation of the Safety Acetylene Storage System, manufactured by the Commercial Acetylene Company.

driven. The auto sparker exhibited by this company is a direct current machine fitted with a positive mechanical governor which is calculated to regulate the speed and output of current regardless of the engine speed. There will also be on exhibition, a charging switch board and a 6-60 storage battery, and a number of specially wound jump-spark coils, to be operated direct from the auto sparker in connection with the switch board, for charging purposes.

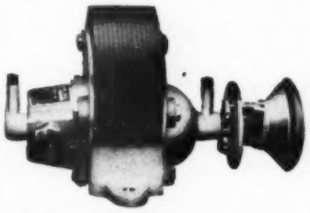
Detroit Lubricator Company, Detroit, Mich. The special feature of this company's exhibit will be seen in their new force feed oil pump, a cut of which we show herewith. This pump is of the sight feed, two piston class and will operate with the engine running in either direction. No ball checks are used so that danger of failure to operate through the use of impure oil is eliminated. The pistons move alternately, one being at rest while the other is in motion and each in its turn is made to act as a mechanically operated valve for the other. The entire mechanism except the driving shaft is at-



Mechanical oiler, a feature of the Detroit Lubricator Company's exhibit.

tached to the cover, and the oil level in the reservoir is indicated by a dial on this cover. In addition to this exhibit, the company will also show a general line of gas engine specialties in the nature of single and multiple gravity oilers, etc.

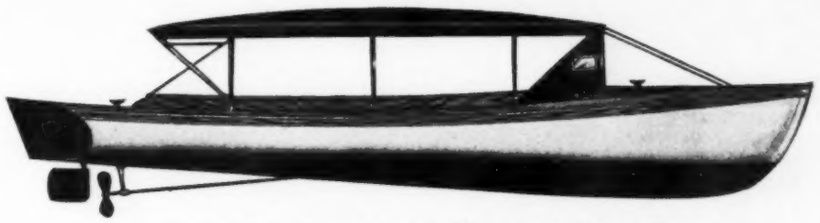
Geiszler Bros. Storage Battery Company, 514-520 West 57th Street, New York. Geiszler Non-Sulphating Storage Battery Igniters will be displayed in all sizes, made with very thick, all hard rubber cases, and with the improved Geiszler non-corroding terminal. These are shown with batteries put up in wooden boxes enclosing hard rubber jars. Their capacity is rated on a five ampere discharge basis and they are especially adapted for supplying electric current for complete lighting



The new Motsinger magneto.

installation. The "Midget" Non-Sulphating Storage Battery of 2 volt, 30 ampere hour capacity will also be shown as well as the Albino Trouble Lamp. The latter consists of a thin spring brass plate upon which a socket for a miniature electric lamp is mounted and fitted with a very fine cupped reflector.

The R. L. Kenyon Co., Waukesha, Wis. This company will exhibit a full line of their well-known motor boat tops, cockpit covers, life preserving cushions, fenders, etc. The accompanying illustration shows the standard folding top with wind shield in place. When not in use, these tops may be folded out of the way and they are provided with side curtains, by the use of which it is possible to completely enclose the cockpit in bad weather.



One of the R. L. Kenyon tops attached to a Mullins boat.

Several of the boats in the Mullins exhibit will be equipped with Kenyon tops of different styles and a complete line of the Kenyon product will be on exhibition with the Mullins Company.

Evans Stamping and Plating Company, Taunton, Mass. We show herewith a cut of one of the Paragon Reverse Gears, a complete line of which will be exhibited by this company. These gears are made in many different sizes and have a number of distinctive features. The pinions are so arranged that there is a balanced distribution of strain, causing the gears to run quietly and with very little vibration. The gearing is positively lubricated on the reverse motion since all the gears travel throughout the full diameter of the case and carry oil through all working parts. The gears have a direct drive through multiple disc friction clutches varying from 67 to 740 square inches in area and are capable of adjustment by means of a screw collar which is easy of access. The reverse motion is transmitted through four 35 point carbon steel, machine planed pinions, bronze bushed and supported at each end. The gears though always in mesh are in operation only on the reverse and run in an oil-tight case.

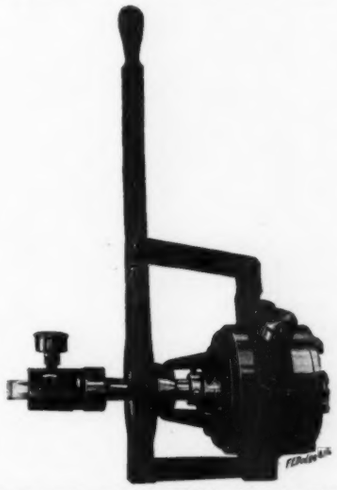
Mechanical Devices Company, Inc., Watervliet, N. Y. This company will show a complete line of their Indispensable Motor Boat Devices and at the front of their booth, will be a model boat fully equipped, having a removable keel so as to illustrate the manner in which the bearings automatically align with the shaft under changing conditions. These Indispensable Devices include their improved Ball Bearing Shaft Hangers, Flexible Shaft Coupling, Balance Submerged Exhaust Outlets, Flexible Pipe Fittings, Ballbearing Stuffingboxes, Metallic Shaft Log, etc. A Fishtail Propeller is being exhibited with which the company is agreeing to refund the purchase price in case the new propeller does not increase the speed of any boat from five to twenty percent. These propellers are made in even sizes from ten to twenty-eight inches diameter and from 12-15 to 39-42 pitch.

Gray-Hawley Manufacturing Company, Detroit, Michigan. The exhibit of this company will include automatic whistles for pleasure craft and commercial boats and marine accessories, such as fog bells, gasoline filters, mufflers, etc. The burned gas compressor with which the power whistles are operated is water jacketed throughout and water connection can be made with any part of the cooling system desired. A three-way valve is so attached that it may be used to either close the port leading to the cylinder, to start the compressor, or to open the connection with cylinder and priming cup for purposes

Geiszler Bros. Non-sulphating storage battery.

of priming the engine. The autochime whistle is made in four sizes, the Senior, Junior, Special and Midget. These whistles are all small in diameter but long, and therefore require less air than the ordinary whistle.

K-W Ignition Company, Cleveland, Ohio. This company will show a complete line of K-W ignition specialties, including their magneto and spark coils of both single and multiple cylinder types. A feature in the con-



Paragon reverse gear exhibited by the Evans Stamping & Plating Company.

struction of the K-W coil is the absolute removal of every particle of moisture, thus preventing short circuits and breakdowns. This moisture is eliminated by placing the coil on end after winding, in a large steam jacketed vat where it is sealed absolutely air-tight and kept at a temperature of 250 degrees for six hours. At the end of that time a vacuum is created in the vat, thus extracting every particle of water and moisture which has been driven off by the heat. It is said that the most severe scientific analyses fail to show any trace of moisture left, and the windings are ten per cent or more lighter than before treatment. Before the coil is removed from the vat, a dielectric solution is admitted under a pressure of 125 pounds to the square inch, which is maintained for three hours before the windings are removed.

E. J. Willis Company, New York. This company will exhibit a full line of the Lockwood-Ash motors, manufactured by the Lockwood-Ash Motor Company of Jackson, Mich. This is a new engine, but due to its simplicity, is fast becoming popular. There will also be on exhibition a full line of the brass and galvanized fittings used in the construction of motor boats, a complete line of New York coils, the Michigan Cartridge Coil, the Bryant and Berry Speed Propeller and Reversing outfits and a complete electric lighting equipment for motor boat use. They will also exhibit the products of a number of other firms and the exhibit will be very interesting from the fact that it will contain almost everything used in connection with the motor boat.

Janney, Steinmetz & Company, New York, will exhibit a complete line of their well-known seamless pressed steel tanks. These tanks are tested to a pressure of 300 pounds

to the square inch, are positively leakless and are extensively used for gasoline and compressed air. A 55 gallon and a 110 gallon seamless, welded, underground storage outfit will also be on exhibition. This is a new product of the company but has become quite popular with motor boatmen who prefer to store their own gasoline. The flash light spark plug will also be on exhibition together with the celebrated Richards Aluminum Solder which is extensively used by many of the large aluminum workers of the country. A description of the underground storage outfit will be found in the department of New Things in this issue.

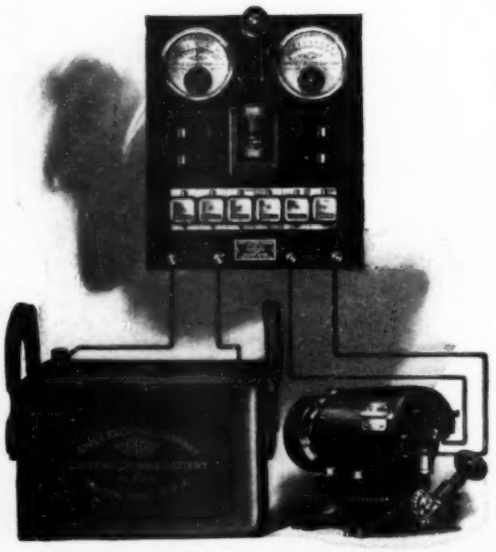
Chas. P. McClellan, Fall River, Mass. A complete line of auto boat tops, spray hoods etc. will be exhibited by this company, who are making a special feature of their Safety Auto Boat Top, a recent innovation. This style is very popular among motor boatmen, inasmuch as it can be furled under any conditions, without any danger of being blown overboard. They can be used in combination with any of the spray hoods made by this company where the top is not wanted the full length of the cockpit. To collapse these tops, it is only necessary to unfasten the forward straps and slide the front part to the rear, the top being made to furl upon its own fixtures without detaching from the frame. All of the fixtures are made of bronze and the cover material is made of 8 ounce khaki.

Young Men's Christian Association, New York. The Motor Boat School of the West Side Young Men's Christian Association, No. 318 West 57th Street, will have on exhibition a series of photographs illustrating the equipment and methods of instruction employed in their school. This school is now in its fourth year; it has graduated 300 men and now has two classes which meet on different nights of the week. The course is in charge of George E. Hackett, a consulting engineer, to whom is due much of the success of this course.

Havoline Oil Company, 80 Broad Street New York. In addition to a full line of their marine motor oil, this company will exhibit several interesting photographs on transparent plates of the most prominent motor boats in the country as well as numerous letters from leading manufacturers who use Havoline Oil. Another interesting exhibit will be a bottle of oil taken from the crankcase of Dixie II after she had run more than 1,000 miles. Even after this hard test, the oil seems to show very little deterioration in body.

James Craig, 556 W. 34th Street, New York City. This exhibit will consist of a number of designs and models of marine engines and special mechanisms designed by Mr. Craig. Engines of from 7 to 300 horsepower are shown.

Bryant & Berry Company, 30 West Atwater Street, Detroit, Mich. This company, who will exhibit through their Eastern representatives, E. J. Willis & Company, 8 Park Place, N. Y., will show a line of B & B Speed Wheels in all different sizes. It is claimed that the design of this wheel gives a much less percentage of slipping than the average wheel and a bona fide guarantee is made by the company to refund the amount paid in case the speed of any launch using this wheel is not increased from one to three miles per hour.



No. 2 electric lighting system shown by the Apple Electric Company.

Welin Davit and Lane & De Groot Company, 17 Battery Place, New York. A line of A, B, C Life Preservers, which are said to be one of the smallest, lightest and most efficient in use, will be shown by this company. These life preservers are all approved by the U. S. Inspectors. In addition to this line will be shown a number of bronze motor boats of light and strong construction, which are non-corrosive and non-fouling.

L. O. Koven & Bro., 50 Cliff Street, New York. This company will show a large line of tanks of all kinds for gasoline, air, oil, water, etc., in addition to mufflers and condensers. A special feature is being made of a galvanized exhaust pipe which is water jacketed, for use with engines of large size. The company manufactures tanks of from 1 to 2,000 gallons capacity, with riveted seams and without any composition of any kind between the metal at the laps to make the tanks tight. All the seams are caulked and fittings are put into the tanks in the same manner as rivets. Tanks are made up complete with the exception of one end, which is left out to enable them to thoroughly clean the inside before galvanizing. After this has been done, the loose end is riveted in, no solder in the joints being used in any case.

Apple Electric Company, Dayton, Ohio. The exhibit of this company in space No. 40 will include their No. 2 electric system, which is shown herewith, in operation. In addition to this they will show the Aplco No. 1 electric system for automobiles, Aplco Marine Running Lights and Searchlights and Aplco Storage Battery.

A Motor Boat Navy.

TO the Seattle Yacht Club belongs the credit of initiating a movement which promises to be of greater significance that what appears at a cursory glance. The originators of the idea have in mind nothing less than the eventual establishment of an auxiliary fleet of motor boats which with their volunteer crews shall ultimately be at the disposal and under the direction of the naval department in a manner similar to the naval reserve. It may not be known to the average layman that a bill destined to place the naval reserve, which is now under the jurisdiction of the particular commonwealth in which it happens to be—within the recognition of the national government on the same footing as the National Guard, is in course of preparation. By the time this has passed the Seattle Yacht Club hopes to have a quasi-organization fully prepared to take advantage of any privileges conceded by the act. The idea has not only been enthusiastically received by the yachtsmen of Puget Sound but has received the official endorsement of the assistant Secretary of the Navy who has appointed Lieut. Commander A. H. Robertson, now on duty at the Bremerton Navy Yard, to render all assistance in his power.

An article by Col. B. F. Whistler, Commandant at Forts Worden and Casey, which appeared in a recent number of Harper's Weekly in dealing with the coast defenses of Puget Sound called attention to the desirability of having a fleet of small boats with trained crews which might be called upon in time of need for picket, patrol and other auxiliary duties. On the British Columbia side of Puget Sound the Royal Vancouver Yacht Club receives from the naval department of England an Admiralty warrant which entitles each boat in its fleet to fly the royal blue ensign in exchange for volunteer service in time of war. This incentive, combined with the fact that an attempt had already been made to start a naval reserve, suggested an amalgamation of the two schemes, which would be of aid to both.

Several meetings have been held at the club house of the S. Y. C. in which both naval and military officers have participated. The peculiar strategic value of Puget Sound, as a point of defense in time of war, was the subject of an address by Col. Whistler, and the advantages of having a fleet of motor boats manned by men not only thoroughly familiar as pilots and navigators with these inland waters, but trained in special branches of service, was thoroughly brought out.

As no appropriation can become available either for naval reserve or an auxiliary motor boat fleet until a bill can be passed through the State Legislature the Seattle Yacht Club has decided to become the sponsor of a temporary organization which will have as its first purpose the formation of a naval reserve and the enactment of the required legislation. Its secondary aim will be the official recognition by the United States Government of motor boats as a sort of auxiliary to the naval department. This it hopes to accomplish by a general demand from all the yachting and motor boat organizations in the country located at such points as demand the institution of improved coast defense, for such recognition. In return for this volunteer service, it is but fair to suppose that the government should extend special privileges—as exemption from inspection, Custom House taxes, etc.—with right to carry a special flag or emblem.

In the meantime the organization will elect temporary officers and from the various naval and military officers located on the Sound will receive instruction along lines somewhat similar to those practiced in the naval militia. Many of the motor boat owners have consented to the use of their "ships" for maneuvers. One of the incidental exercises planned is the utilization of the boats in conjunction with the drill of the forts that guard the entrance of Puget Sound. A part of the yacht club squadron will be delegated to attempt the role of blockade runners and run the gauntlet of the forts at night or during fog. The balance of the fleet will serve as pickets and patrols. A course of instruction in signalling is among the studies contemplated. As many ex-members of naval reserves from other states now reside in the city of Seattle, it is anticipated that a great deal of enthusiasm will be stirred up. Already the entire membership of the club have signed membership of the temporary organization.

The Barriquand and Marre hydroplane that has attained a speed of 46½ miles per hour.

We are now able to show further illustrations of the remarkable French speed creation, which appeared as the frontispiece in the February issue of MoToR BoatinG. This craft is ten feet long and is propelled by a Wright aeroplane motor of 70 horse-power. As we pointed out last month, and as can be seen from the several views above, the drive is forward to the bow and thence to the propeller shaft by a system of gearing, which gives the propeller a speed of 2000 r. p. m. at the motor's normal speed of 1440. When at high speed the rudder, which is at the bow, is entirely out of water and steering is done by leaning to one side or the other, as shown in the center illustration.

Propeller Slip--What It Really Is.

A Discussion and Analysis of This Widely Misunderstood Phenomenon. Some Figures and Formulas That are Easy to Follow.

By Thomas L. White.

HISTORICALLY speaking, slip is a word which was adopted into general use as a technical term before the character of the phenomenon of which it is descriptive was very clearly understood. It has therefore come about that from a modern standpoint slip represents a view of the operation of the screw propeller which is inadequate and in some ways misleading; and while the substitution of the word acceleration has been suggested, at this late stage the practical course seems to be to retain the older term but to divest it of some of its original narrowness by virtually redefining it.

By the pitch of a screw propeller is meant the distance through which it would move in the direction of its own axis during one complete revolution if it were allowed to turn in a solid nut, each blade being provided with a thread in which to travel. If it be objected that the pitch angle of a modern propeller is not uniform but varies from point to point, then it must be borne in mind that this definition dates from a time when the form of a screw was a true helix. Moreover as the conception of a screw and nut is chiefly useful for purposes of illustration, it can be retained without sacrifice of accuracy by introducing the conception of *mean pitch*, this being taken to be the travel per revolution in a solid stationary nut of an equivalent screw of which the uniform pitch is equal to the mean pitch angle of the original propeller. In this case if we denote by V_p the axial velocity, then V_p is equal to the mean pitch of the original screw (the actual pitch of the equivalent screw) multiplied by the number of revolutions per second.

When a screw is turning in still water and propelling a ship, we have a system analogous to a screw turning in a nut, the nut itself having a backward velocity x equal to the velocity with which the propeller pushes back the water on which it is acting and from which it gets purchase to thrust the ship ahead. Then since the screw is moving forward with a velocity V_p relatively to the nut, while the nut itself moves backward with a velocity x, the net velocity forward of the screw must be $V_p - x$. In the case of a ship x is known as the real slip and is clearly equal to the change of velocity produced in the water of the wake by the propeller. This is evident when we bear in mind that the water on which the screw acts corresponds to our hypothetical moving nut. We have, therefore, denoting the velocity of the ship by V_s,

$$V_s = V_p - x = V_p - \text{The real slip, or}$$
$$\text{the real slip} = V_p - V_s \qquad (1)$$

The next step is to take the case of a screw propeller which is working not in still water but in a following current drawn in behind the ship. This is a close approximation to the conditions which obtain in actual practice, and let us denote the velocity of the frictional wake, as it is called, by V_w. Then, to keep the analogy of the nut and screw, our nut now not only has a velocity backward equal to the real slip, x, but a velocity forward equal equal to V_w. Its actual velocity backward is therefore $x - V_w$ and, following exactly the same line of reasoning as before, the net forward velocity of the screw is $V_p - (x - V_w)$. Therefore,

$$\text{or } V_s = V_p - x + V_w$$
$$V_s = V_p - (x - V_w)$$
$$\text{or the real slip} = V_p + V_w - V_s \qquad (2)$$

Whether there is a frictional wake or not it should be noted that the real slip always equals the distance which the ship would have traveled in the unit of time, if there had been no such thing as slip at all, less the distance actually traveled. And of course in every case the real slip is by definition the change of velocity produced in the water of the wake.

The expression $V_p - V_s$ is often referred to as the apparent slip. Hence, when there is no frictional wake, the apparent slip and the real slip are equal. Otherwise we have from (2)

$$\text{real slip} = V_w + \text{apparent slip.}$$

The real slip is always positive, for it represents an actual change of velocity. If then the velocity V_w of the frictional wake should happen to be equal to the real slip, the apparent slip would be zero. And if V_w should be greater than the real slip, the apparent slip would become negative. Both of these deductions follow at once from the last equation. If the apparent slip is negative and equal to $-k$, we have from the definition of negative slip

$$V_p - V_s = -k$$
$$\text{or } V_s = V_p + k$$

The ship is in this case going faster than it would in still water on the supposition of a total absence of all real slip whatever. As this result may seem reminiscent of "uplifts by one's own bootstraps to higher planes of energizing" we shall derive it again in the sequel and from altogether different premises.

The original idea of slip was of something almost incidental to the functions of the screw propeller, of so much lost motion due to the yielding character of the fluid abutment presented by the water. Hence the word, as originally employed, connotes the diminished progress of the vessel rather than the change of velocity in the water of the wake. That slip is the fundamental condition of all propulsion and that other things equal the greater the slip the greater the velocity of the ship are truths which were realized later.

In a last analysis every propeller is a pump and the force which pushes a ship ahead is the same in origin and kind as the force which the fireman is compelled to resist when he is holding the nozzle of a fire hose. If m be the mass of water acted on per second by a propeller and x, as before, the velocity imparted to it, in other words the real slip, then the total change of momentum per second produced in the water of the wake is mx. But by the second law of motion the change of momentum per unit of time is a measure of the force producing it. Therefore the force acting on the water of the wake, which is equal and opposite to the force exerted by the water of the wake on the propeller, is mx. Aund the useful work done in propulsion per second, being equal to the propelling force multiplied by the distance through which it acts per second, is given by $V_s mx$.

If we agree to neglect the existence of a frictional wake, each portion of the wake water as it is acted on by the propeller has its velocity accelerated from o to x, and the work expended in doing this can be shown to be equal to $\frac{1}{2}mx^2$, which is the usual expression for the kinetic energy or energy of motion of a mass m moving with a velocity x. Therefore the total work done by the propeller on the ship and on the wake water is $mxV_s + \frac{1}{2}mx^2$, of which the part mxV_s is usefully employed in propelling. We may therefore take the efficiency of the propeller to be

$$\frac{\text{Useful work}}{\text{Total work}} = \frac{mxV_s}{mxV_s + \frac{1}{2}mx^2} = \frac{V_s}{V_s + \frac{1}{2}x} \qquad (3)$$

a result due to Rankine, who gave it as the maximum possible efficiency of a propeller, there being no eddy, friction, centrifugal, or shock losses. If we put x equal to zero, the efficiency becomes unity, and we have a case which is represented when a boat is towed at a velocity V_s by a rope.

Under actual conditions of propulsion the screw can never be represented as working in still water, nor on the other hand can it be assumed that it obtains the full benefit of the frictional wake. However, as a limiting case, let us assume that it does. Then, V_w, the velocity of the frictional wake in the direction of the motion, must clearly be equal to the slip, so that, when the water following the ship has been acted on by the screw, it is brought to rest. To derive the efficiency, we have the useful work done in propulsion equal to $V_s mx$, as before, that is $V_s mV_w$. Moreover as the frictional wake has a velocity V_w, and therefore an energy equal to $\frac{1}{2}mV_w^2$, before it is operated on and is at rest after it has been operated upon, i. e., has no energy at all, the propeller must take this energy, $\frac{1}{2}mV_w^2$, out of it. Hence the net work done by the motor is $V_s mx - \frac{1}{2}mV_w^2$ and we have

$$\frac{\text{Useful work}}{\text{Total work}} = \frac{V_s mV_w}{V_s mV_w - \frac{1}{2}mV_w^2} = \frac{V_s}{V_s - \frac{1}{2}V_w}$$

which is greater than unity. Under such circumstances, the net propulsive effect is actually greater than if the same motor power were expended in towing the vessel by a rope or could be utilized through a propeller which revolved without slip in still water. This result, it will be remembered, we have already derived without introducing any considerations of work or energy.

As a third case, and one which might easily occur in practice, let us assume that the slip is twice the velocity of the frictional wake. Then the following current will have its velocity changed from V_w forwards to V_w backwards, since the total change it undergoes is by supposition $2V_w$, the slip. The energy of the wake is therefore $\frac{1}{2}mV_w^2$ both before and after it has been acted on by the propeller, for the work taken from the frictional wake in bringing it from a velocity V_w to rest is equal to the work put into it in giving it a final velocity V_w sternwards. The motor, then, neither receives energy from the wake nor imparts any to it, the net propulsive effect equals the total motor output, and the efficiency is unity.

The general expression for the efficiency, when there is a frictional wake, of which the velocity does not bear any specified ratio to the real slip, is

$$\frac{V_s}{V_s + \frac{1}{2}x - V_w}$$

It can readily be derived from the fact that the energy taken out of the water is in this case $\frac{1}{2}mV_w^2$ and the energy left behind, $\frac{1}{2}m(x - V_w)^2$. The interesting point to note is that it is clearly an advantage under all conditions to keep down the value of x if the work done by the motor is to be utilized to the best effect. As the thrust on the ship is equal to mx, this means that in order to maintain a given speed m must be large. In practice, however, a large blade surface causes an inordinate friction loss, while if it is attempted to obtain a large value of m by lengthening the propeller blades, the increased centrifugal effect rapidly lowers the efficiency by diminish-

(*Continued on page 48*)

The First Chinese Motor Sampan.

IN the following letter to the Editor of MOTOR BOATING, Mr. Julian H. Arnold, the United States Consul General at Amoy, China, describes the first native sampan to be equipped with a gasoline engine.

American Consular Service.
Amoy, China, November 10, 1909.

To the Editor of MOTOR BOATING,
Sir:

On August 29 of this year this office addressed you in reply to your letter of July 10 in regard to developments in motor boats and equipments at this port during the past two years.

At that time we said that the experiment was being tried of placing a gasoline engine in a native sampan. We told you at that time we would give you full particulars at a later date of the results of this experiment. As you probably know, the sampan is a species of flat bottom dory. It is used extensively throughout the ports of China and we estimate that there are about two thousand sampans in use in this district alone.

The interior of the Sampan, showing the position of the motor, steering wheel and gasoline tank.

The one in question, which has been equipped with a gasoline engine, is of the ordinary native type, 18 feet 9 inches in length (over all), 5 feet 3 inches in width (over all), and draws about 15 inches of water. On the waterline she is but 16 feet 3 inches in length and 4 feet wide. It is equipped with a single cylinder Hildreth gasoline engine with reversing gear. She has a seating capacity for seven persons, and is the type of boat particularly well adapted to this harbor, where there is considerable rough weather. At slack tide, she makes a speed of about 7 miles an hour. Often the tide is so strong i.. this harbor as to make is impossible for a sampan, rowed by the ordinary Chinese coolie, to make any progress against it.

A great advantage in using a boat of this character as a motor boat lies in the fact that in the event of any accident to the motor the boat can be rowed by one man. It is a difficult matter to secure native labor, sufficiently intelligent to understand all that is necessary concerning a motor. So that it often happens that in the event of something going wrong with the motor, the engineer (if a Chinese) is unable to fathom the difficulty immediately, and if the boat is in the harbor, it is liable to be carried by the tide and thrown on to rocks or collide with some other vessel, but with the sampan type of boat and with the native boatman as an engineer, he can at a moment's notice fix the oars on the gunwales, and row the boat the same as any other sampan, thus putting it immediately under his control.

The American physician who is making the experiment with the boat in question, states that if he were equip a second sampan, he would set the motor a little farther forward, make the boat 3 feet longer, and arrange the seating capacity so as to afford more comfort to the passengers. He states that the 3½ horsepower, single cylinder Hildreth gasoline motor with which the boat is equipped is perfectly capable of driving a boat 3 feet longer than this one, at the rate of 7 miles an hour.

He praises the engine for its simplicity and for the solidity of its construction, two extremely necessary qualities in Chinese ports where native labor is to be depended upon. He states, further, that the dry cells deteriorate very rapidly in this climate, thus producing a difficulty in ignition, and recommends to secure one equally efficient, for the reason that the price of gasoline in China is about twice that of kerosene.

"It would be difficult to find a native boat without eyes painted on its bows."

If a kerosene engine has been invented with the compactness, simplicity and efficiency of the better class gasoline engine, then such an engine would fit the conditions here, and find a better market than would the ordinary gasoline engine, which is somewhat expensive on account of the high price of the gasoline.

I am enclosing herewith three photographs of the sampan equipped with a single Hildreth gesoline motor. The photographs were taken on shore, in order to afford a better view of the details of the construction and of the arrangement of the engine and the seating facilities of the boat.

You will note by a glance at the photograph that the gasolie tank is placed well in the bow, that the engine is about in the center, and that the seating facilities are divided, part being in the bow and part in the stern. You will note also that the rudder is fastened to a frame which forms a shoe, protecting the propeller. The rudder is considerably heavier than would be necessary.

An interesting feature in the construction of the native sampan, as you will note in the

(*Continued on page 48.*)

Stern view of the Sampan, showing its liberal sheer and heavy construction.

The Lengthening of a Launch.

By Alton G. Cook.

NO doubt there are many besides the writer of this article who have built or own launches that after being used for a season or two, have proved to be too small while perfectly satisfactory in every other respect, and have often wished them just a little larger and longer. At any rate, this was the state of mind in which I found myself last winter and I am going to tell you how I overcame the difficulty. But perhaps before getting down to the details of her lengthening it might be well to give a short history and description of Iola, the launch in question.

Iola was designed and built by my father and me during the winter of 1906-7 in the basement of our house, but for various reasons she was not launched until the spring of 1908. Her dimensions were, roughly speaking, 21 feet 6 inches over all and 5 feet 8 inches beam. She was equipped with a two-cycle, 5-horsepower Petoskey engine and with this small power she easily attained a speed of 8 miles an hour. Since lengthening but with the same engine and propeller she has done 8½ miles over a measured course.

During the season of 1908 Iola gave the best of satisfaction, was a good sea boat even for the rough waters of Little Traverse Bay and Lake Michigan, and was steady and reasonably fast; but in just one respect she fell short of the mark; she was always too small for the number of friends that we wanted to take with us. Hence the dissatisfaction that resulted in her lengthening. However, before proceeding further with the "How it was done," a few words of advice and warning might be in order: All launches cannot be lengthened successfully—some may be too narrow, others may not have free and easy enough lines, or as an old salt might say: are "pot-bellied" to such an extent that it would be next to impossible to lengthen them and get a good-looking job. Still others may have an irregular sheer so that when pulled apart they could not be trued up without building the top side all over again. But to those who have a launch which is of fairly good model with plenty of beam, but that is a trifle too short, I would say go at it and you will be well repaid for your time and trouble.

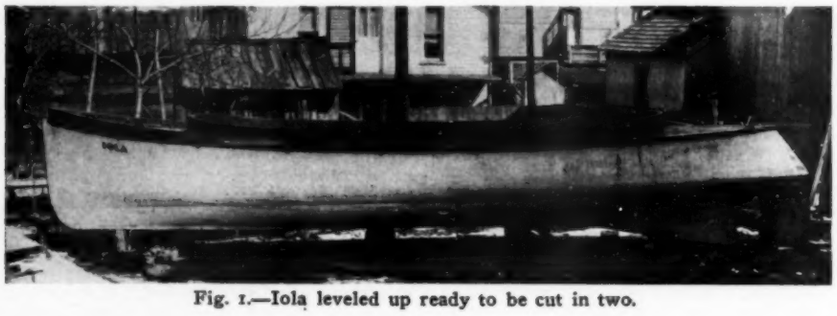


Fig. 1.—Iola leveled up ready to be cut in two.

The first thing to do is to place your launch where you are going to do the work, level her up both ways and solidly block up and prop the stern. Now look her over carefully and you will find, if she is a well modeled boat, a place where she seems to be the largest, where all the lines seem to meet, as it were, and this is the place to cut her in two. It will first be necessary, of course, to remove the floor, seats, and any other obstructions that may be in the way. Illustration No. 1 shows Iola leveled up as above stated and ready for the operation. Illustration No. 2 shows her cut in two with the bow pushed forward. She was lengthened 3½ feet, making her 25 feet over all and as she spread but one inch her beam is now 5 feet 9 inches. When you have the bow drawn far enough away to give her the required length, level it up as best you can temporarily, for you will have to do it over again when the battens are put on. Now you are ready to put in the new section of the keel. This should be done with a ship lap, at least a foot long, on both ends. The lap on the old keel should be made on the outside of the boat, as by doing this you will not have to disturb the inside timbers. After the timbers were in place, I put in a keelson, bolting it through and through and thus making a job that was even stronger than the old one. The accompanying sketch, Fig. 6, shows how this was done.

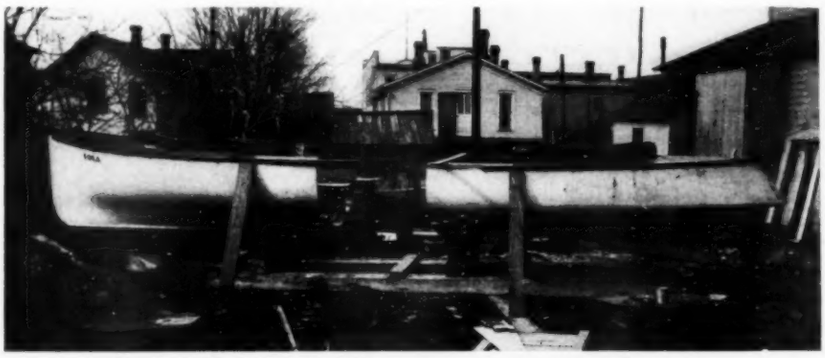


Fig. 2.—The bow pushed forward to give the required length.

Illustration No. 3 shows the boat with the battens on and the ribs in place, and, by the way, do not make the mistake of using small battens, for if you do the ribs will string them out of place. The ones I used were ⅞ of an inch thick, 4 inches wide and long enough to lap at least 3 feet at both ends. They were then fastened with screws, at first only at the ends, so that they would assume a natural curve and then, where needed, were filled out with shim and fastened with screws where the planking was cut.

I put in, what a boatbuilder would call, half ribs, that is to say, they were not continuous from gunnel to gunnel, but extended only half way. They were beveled to fit the keel and placed fore and aft of each other, which arrangement permitted their extending clear across the keel, thus giving additional strength. They were spaced 8 inches from center to center. You will, of course, say that this was too much, but after the planking was put on I put in another set between those already in place, that reached from a point above the turn of the bilge on one side to the corresponding point on the other side, thereby making them 4 inches from center to center and making the strongest kind of a job at the bottom where most needed. In bending in the ribs, fasten them with clamps, if you have enough, but if not, nailing will do.

In the foreground of illustration No. 3 will be seen my steam box and perhaps a description of this steaming apparatus might be of value. I procured a length of eight-inch stovepipe and plugged up both ends with pine boards; the bottom one being buried an inch or so in the sand to prevent its burning. I screwed a piece of half-inch gas pipe into an opening in the upper end and from that a piece of rubber hose was run to the steam box. This improvised boiler was then filled nearly full of water and a fire was built around it.

Illustration No. 4 shows the boat about half planked up and the shelter which was used to protect it from the rain and snow.

Before commencing to plank, a line should be stretched along the keel, straightened up and fastened. Then make a batten ⅝ of an inch square and about 14 feet long and fair up the sides and the sheer. If the sheer is not fair, you can make it so by raising the ends.

Putting on the planking is, perhaps, the most particular job of all. The appearance of the bottom, of course, is not of very great importance, but when you get up the sides you

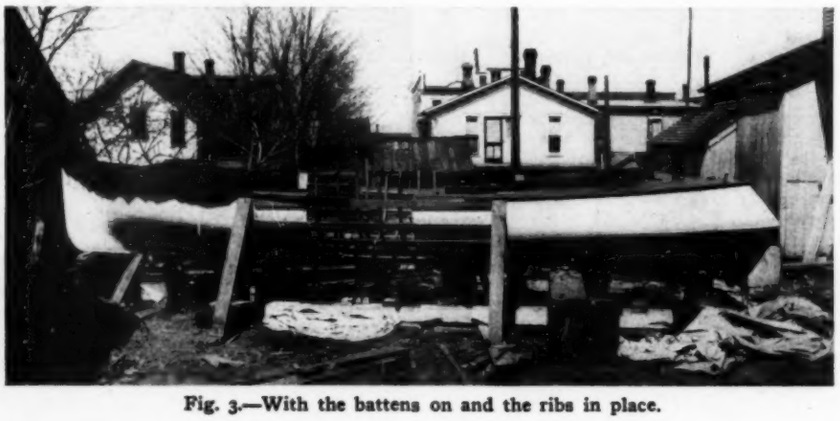


Fig. 3.—With the battens on and the ribs in place.

Fig. 4.—As she appeared when half planked.

cannot be too particular. You should see that the new planking lines up fairly with the old and that the seams are tight on the inside and open on the outside to admit the caulking. In putting in the planking, you must take great care to break joints by at least two timbers, but three would be better. If there is an old butt within two or three timbers of where the new butt is to come, remove the old plank clear up to it, for you must not leave any short pieces. If you will look at the illustration you will see two pieces of planking on the after part that run quite a ways back. In both of these cases the old plank was removed because the butt came too close to the cut.

All the butts were made to come between the timbers and not on them, as was the old way. To make them solid a piece of the same material as the planking and just long enough to go between the timbers was cut and, after coating with heavy white lead, was clinched in place with clout nails. This arrangement makes the strongest kind of a butt, much stronger in fact than the planking itself.

Illustration No. 5 shows the completed boat, and it has been a great deal of satisfaction to know that she is much better looking than before she was lengthened. Of course, there were pessimists around who said that such a thing would spoil her and that I had better leave well enough alone, et cetera, but now they all can see that she is much better in every way than she was before she was lengthened.

To sum up, I have gained a better looking boat, a larger boat, a better sea boat, a faster boat and a better carrier. Lengthening her raised her out of the water about 2½ inches forward and 3 inches aft and this, with her extra long floor, I think, accounts for the gain in speed. I was fortunate in not having to move the engine bed or the side seats forward. The coaming shows no sign of having been cut as the two end pieces were joined with the straight pieces forming the sides and all that was necessary to obtain a neat job was to cut out the latter and put in longer ones. The lining of the cockpit was made to match and break joints in the same manner as with the planking, and it is impossible to see where the cut was made either on the inside or the outside of the boat.

Fig. 5.—Iola is much better looking since her lengthening.

Fig. 6.—Showing method of splicing the keel.

Ignition in Make-and-Break Engines.

*By E. E. Hudson.**

THE lack of uniformity in the time length of contact on gas and gasoline engines of the make-and-break type seems to furnish a subject for discussion that should result in material benefit to all parties interested in the gas and gasoline engine industry, including the manufacturers and users of engines, as well as the manufacturers of and dealers in ignition supplies.

On account of the great diversity of contact lengths found in the different engines in general use, it is impossible to devise a standard ignition outfit suitable for make-and-break engines of all makes, without sacrificing efficiency in the majority of cases; since with a combination of battery and spark coil that will give satisfactory service with an engine having a minimum length of battery energy would not be sufficient for an engine on which the duration of contact is greater. On the other hand, an outfit designed for an engine having a minimum contact length would contain a greater number of cells than necessary for this particular engine.

In some cases where a sparking outfit is used in connection with marine engines having variable speeds, it is found that satisfactory results are obtained on low speed, but that the spark fails to ignite the mixture on the higher speed. This is especially true of engines on which the igniter mechanism is operated by an eccentric from the crankshaft, as in general with such engines not only is the length of contact reduced for the reason that in advancing the spark only the contact "break" is advanced, and the contact "make" occurs at the same point in the revolution as on low speed. Thus, an engine of this type having a contact length equal to approximately one-eighth of a revolution would have a time length of contact, at a speed of 300 r.p.m., of approximately .025 of a second, but if the speed of the engine is increased to 400 r.p.m., the time length of contact would then be reduced to about .020 or .02 of a second, provided the angle of contact remains the same. But, if the spark is advanced by shortening the angle of contact by say one-fourth its original length, it will be seen that the time of contact is reduced still further to less than .014 of a second.

It follows, therefore, that it will require a battery of considerably higher voltage to furnish a satisfactory spark for such an engine, when operated at high speed, than is necessary for low speed, and if the outfit used is capable of producing satisfactory results on high speed, there must be a great waste of current on low speed, due to the circuit remaining closed longer than is necessary to obtain sufficient spark energy. In a case like that just described, it is evident that on low speed the current discharge during about one-half the contact is wasted.

It is clearly evident that, from the viewpoint of battery economy, this method of advancing the spark is the reverse of what it should be, since the angle of contact should be sufficiently greater on high speed than on low speed to compensate for the difference in speed and to secure a uniform time length of contact.

From a cemmercial or practical standpoint a sparking outfit should be applicable to all makes of engines. The ordinary dealer or user is not sufficiently posted on ignition in general to understand why one engine should require a greater number of cells than another, and this occasionally results in a complaint to the battery manufacturer that material furnished is defective, because the user cannot get satisfactory service from a battery supposed to be identical with one used by a neighbor with entire satisfaction. The manufacturer of ignition devices cannot possibly know the make of an engine with which each of his sparking outfits is to be used; but even if he had this information, it would still be impossible for him to keep posted as to the peculiar conditions governing each make of engine. It becomes necessary, therefore, in designing an ignition outfit intended for general use, to provide a sufficient amount of power to assure proper ignition in engines having the shortest contacts.

Tests made to determine the actual time re-

(*Continued on page 48.*)

*Paper read before the National Gas and Gasoline Engine Trades Association, Chicago, Dec. 1, 1909.

What Is a Small Cruiser?

The Construction and Requirements of This Popular Type of Motor Boat. A Discussion by One Who Has Made a Specialty of Its Design.

By H. P. Johnson.

A FRIEND of mine, with a large "boat bug" but small cash wad, rounded up alongside my drawing board, the other day, and made fast, with the air of the fellow who's come to stay awhile. "What's a small cruiser, anyway?" he inquired, "I want a boat bad—she has to be small enough to fit my pocket book, easy enough for a child to handle, fast enough to take me somewhere and return the same day and ship enough to bring me home in a little wet and a breeze.—What can you do? Open up! Now s'pose we start at the beginning."

Naturally, length and prices run in almost parallel lines, so we want as little length as consistent. In protected waters we might not need as much length as in the open, not because length has anything to do with seaworthiness, for it hasn't, a boat fifteen feet long, if she be properly designed, is just as seaworthy as a fifty-footer, but she will be a lively little witch in a sea that the fifty-footer would not notice, but as long as the weights are properly placed and the hull kept closed and tight, no sea ever ran that could hurt her. But in order to derive any pleasure from the game, we must have a boat which is fairly comfortable in any weather, and with sufficient accommodations, so that the crew can keep dry and warm for at least part of the time, and last, but by far the most important, she must have elbow room, and sufficient appliances to allow the chef to get in his work under almost any conditions.

A well arranged galley is most important, for it means a chance to keep alive the cook's ability to pass out the rations, and that means everything. A well-fed crew, no matter how cold or wet, will tackle anything, if they are the right sort, but let the cook fail to deliver, and you will have a hard time keeping them on the job.

Unfortunately, even though the sides of our pockets may be close together and the bottom close to the top, a six-foot man still needs a six-foot bunk to sleep in, and something like six feet to stand up in, just the same on a twenty-footer as he does on the Hendrick Hudson. We can't build our boats up as high as we do our houses, so this consideration bears directly on length.

Naturally, on a small boat we spend the greater part of our time outside, so the cockpit should be generous in size as the pocket will allow.

With these principal points to guide us, I should say, that from twenty-five to twenty-eight feet would be about as small a boat as could be used for a real cruiser. Smaller boats are often used to the entire satisfaction of their owners, but of course sacrifices have to be made in one direction or another.

In general design, the two most prominent features of a real good small boat are beam and weight. The very first thing we must be willing to economize on, in the small cruiser, is speed. Seven and a half to eight miles per hour is plenty fast enough for such a boat, and can be obtained with a small power plant, and the boat can be given good breadth, which means plenty of room inside, and stability to the hull. Eight feet for a 25-footer and 9 feet for a 28-footer is good beam at the sheer line. One of the most inconvenient features of the small, narrow boat is the habit of listing way down, so that we have to hold on when the average man walks across the deck.

Weight, too, is a factor in seaworthiness, for it gives the boat power to keep going through a sea and is as important as the flywheel of the motor. A twenty-five footer should weigh about 6,000 pounds, and a 28 about 8,000 pounds. These weights, with ordinary construction call for ballast, which is a much better method than very heavy construction, besides being much cheaper.

In sections, there should be plenty of deadrise, which not only makes a more seaworthy form than the flat boat, but allows of the flooring being placed lower, and increases the cabin head room for the same height of cabin side. The point of greatest beam should be considerably above the waterline which with the deep under body gives fairly easy bilges, but at the same time, a good bearing surface when the boat rolls down.

The waterline beam is kept narrow, which tends toward an easy driving hull. The topside should be well rolled-in to avoid any appearance of top heaviness.

The forward sections should have plenty of flare, as it keeps the boat from diving, and gives room on deck, of which there is never too much, for handling anchors in heavy weather.

The stern sections should show considerable deadrise, for although this form appears to settle more than the very flat sections when the boat is running, it is more in appearance than reality, and the pounding of a flat stern at anchor is very real when one tries to sleep.

In the matters of transoms, much can be left to personal taste. A flat transom is simple, and as seaworthy as any, provided it rakes aft. A forward raking transom besides not looking "shippy" has a failing for mixing up with docks and things where fending off is difficult, and in a seaway this cowcatcher variety can scoop up quite a lot of water and spray and shovel it into the cockpit.

The V-shaped transom looks very well, especially on wide boats, but of course is a little more expensive than the flat one.

The shape of the stem is generally outlined by the designer's idea of "balance" with the transom. However, in short boats, the one nearest plumb has the advantage of affording the maximum waterline length, and fills out all the lines.

In freeboard, it is a good idea to carry the sides up rather high, giving the boat more body, which naturally adds seaworthiness and "power." In the small flush deck boat, we are always tempted to cover this height of side to excess in our desire to obtain as much head room as possible in the cabin. Too much freeboard is as bad, or even worse than too little, as it produces a boat as top heavy in fact as in appearance, and a craft extremely high sided forward always has a tendency to "sail around" at anchor.

When handling in crowded places, under slow speed, a high boat is generally hard to manage, on account of the large surface presented if there is any breeze to speak of.

I should say that for a boat under 30 feet, the deck edge forward should not be much higher than one-sixth of the over all length of the boat.

This height affords about 5 feet 3 inches head room in a 25-foot boat, and 5 feet 8 inches in a 28-footer. This height might be increased by a few inches by placing the floor very low in the boat. This is extremely bad practice, however, for all small boats leak a little more or less, and if the clearance between the planking and flooring is small, the bilge water slops around over the floor as soon as the boat begins to roll, making things uncomfortable indeed.

The rudder should be sufficiently large to handle the boat under all conditions. A small boat needs a larger rudder proportionately than a large one, the area of the rudder should be about 1/15 of the cross sectional area of the underwater body.

Carrying the garboard line well down, making fairly deep aft sections, has the advantage of allowing the motor to be placed well aft, if necessary, and also shortens the length of the shaft-log, which helps considerably if it is to be bored, as it should be in all small boats.

I hardly believe a happier thought will ever be struck for the small boat than that of carrying the sides directly up to the cabin top. This arrangement gives the maximum amount of room inside and on deck, and is the strongest construction that can be devised. The cabin side and coaming can be made all in one piece, which simplifies matters.

In the matter of construction, simplicity, of course, should be the keynote. The principal members of the backbone, stem, keel, deadwood and shaft-log, should all be very substantial. Plenty of lumber here is no detriment, and it gives something solid to build on. It is a satisfaction, too, to know that a little two-point suspension isn't going to start things.

The frames should be bent, and connected with heavy floors where they join the keel.

For small boats, up to 50 feet, the "Strip

Broadside view of the 28-footer which incorporates the author's ideas as to what a small cruiser should be.

(See plans on pages 28 and 29.)

system" of planking has found great favor with many. Soft wood, such as cypress is used, cut into strips about 2 inches wide, and mill dressed. These strips are sprung right into place, and edge-nailed into each other, needing only a little beveling, and occasionally the tapering of one strip. With this method the strips are not caulked and swell perfectly tight. This system has the advantage of making the sides very stiff, and bilge stringers and clamps can be entirely eliminated. There is practically no waste of lumber as in wide planking and the outside of the hull always appears smooth, in absence of puttied seams.

Canvas, laid in paint, is the only practical covering for the cabin top, as it always keeps tight, but the cockpit deck may be laid with narrow strips of tongue and groove material, say not over 2¼ inches wide. If the lumber is dry, and the grooves filled with thick paint when laid, the deck will look well, be tight and wear very much better than if canvas covered.

It is always well to make the cockpit deck a little above the level of the waterline, when the boat is at rest, and provide for scuppers to carry off the water. Small boats often change trim considerably, under various conditions, and nothing is more disagreeable than water standing in the corners of the cockpit.

The door sills leading into the cabin should be well above the cockpit deck; four inches is a good height on small craft. Besides lessening the possibility of a sea finding its way below, the deck can be swabbed without splashing into the cabin.

A quick way of getting to the steering gear is imperative. A hatch directly over the tiller is best, and if an emergency tiller is provided nothing short of smashing the rudder will put the boat out of control.

Don't spare labor or material in your engine bed, and don't let anyone tell you that a bed as long as the engine frame is long enough. Keep the engine up off the bottom of the boat, so that you can get some heavy floors under it, and securely bolt them to the keel, letting them come up as high as the flooring will permit. The engine bearers should be halved down into the floors, and securely bolted. This part of the construction cannot be too solid, as the vibration caused by a poor bed is with you all the time the motor is running.

A good idea, and one which adds to the solidity of the bed, is to fill in between the floors and bearing with cement, allowing a small space under the motor, and a pool where grease can collect. This will help wonderfully in keeping the bilges of the boat "sweet."

In laying out the cabin, personal taste has much to do with the arrangement, but the most we can expect in a boat under thirty-three feet, with a fair sized cockpit, is two berths in the cabin with sufficient space to move around the motor and in the galley. The two berths may be very wide, owing to the healthy beam, and are very comfortable. A very convenient "extension" is arranged by buttoning a strip of heavy canvas over screw heads in the top of the berths about 4 inches from the edge, stretching it tightly across from berth to berth. This forms an excellent third berth, with plenty of width, and is far better than wood extension boards or sliding tops, as it can be placed in position quickly and when not in use can be rolled up and stored in a locker.

The motor room and galley may be arranged as shown in the plans on another page. The bulkhead, extending to the ceiling entirely conceals the motor and galley at the main entrance and gives one the impression of entering a yacht and not a machine shop. One door leads from the main cabin to the galley, and the partition just forward of the flywheel is hinged. This partition has a small bookcase with leaded glass doors, set in flush. The motor is placed so that the cylinders are all in the cabin, the reverse gear being under the "bridge" where the head room is 3 feet 6 inches.

The bulkhead alongside of the motor has an instantly removable panel, longer and higher than the engine, giving access to every part. Ordinarily, the partition at the forward end of the motor is not in the way in starting, but for working on the motor it can be swung back and the motor is clear at every point. The coils are placed on the bulkhead, and the secondary wires are fifteen inches long. The tools rest in racks on the cabin bulkhead directly over the engine.

The galley is particularly spacious, with sufficient locker space to hold three weeks' provisions.

Ventilation is provided for by one roof hatch and companion slide and doors.

Alongside the entrance are lockers for fishing tackle, etc., with sliding doors.

One of the best features of the boat is the "bridge" deck, 18 inches high and 2 feet long; under it is the clutch, with lockers on one side, and on the port side three small tanks, for lubricating oil, kerosene and alcohol for the stove. They fill from the deck and have faucets, doing away with empty cans rattling around with every roll.

The spark and throttle controls are on the wheel box to starboard, and the reverse lever to port, putting the whole outfit under the control of the man at the wheel.

The cockpit is 10 feet long, including the bridge. I believe a clear cockpit without seats to be best, deck chairs can be used, which are far more comfortable and sociable. A permanent canopy is a necessity in warm climates, and nothing can beat the arrangement of pipe stanchions bent in one piece, covered with slats, over which is painted canvas. Side curtains are a convenience, and a good wind shield is a wood sash hinged to the underside of the canopy, which, when not in use, may be lashed up out of the way.

In cabin tops having quite a high crown, the best scheme is to have the beams nearly flat in the center, the crown being carried near the edges. This gives an easy deck to walk on.

A railing of cast-iron stanchions and wire rope looks well and is perfectly secure. It can be carried around near the deck edge until well forward, where it is brought in and run parallel, with about three feet between the ropes.

This gives a very convenient deck from which to handle the anchor.

Don't, in the pursuit of head room, give the deck too much crown. The total crown of the deck should under no circumstances exceed 1¼ inches for every foot of breadth.

Hatches should be placed well out in the sides in preference to the center line, as the center of the deck, which is most available, is then perfectly clear.

On small boats, and where cost is an item, probably the best ventilation system is through hatches in the deck. The ports may be fixed, which arrangement prevents leaks and lowers the cost. The hatch coamings can be made square, and the hatches hinged. Instead of hinging to deck they can be hinged to a small sub-coaming which may be turned in any direction. In rainy weather a piece of canvas, about 18 inches wider than the hatch on all sides, buttons over the hatch and lashes to the railing. This will keep out any kind of rain.

In the matter of tanks, there are many arguments to offer. The most ecenomical solution is to use two cylindrical galvanized range boilers, or regular steel gasoline tanks. They are cheap and substantially made, tested to 200 pounds pressure. These can be stowed under the cockpit floor, and are out of the way and accessible. The gasoline piping is then less than ten feet, every foot of which is exposed.

The glass wind-shield is a great comfort in bad weather.

The water tank can be of galvanized iron, made to fit the bow and placed high enough to feed the galley sink by gravity.

The water tank should have a hand hole plate in it large enough for one to get his hand inside to clean the tank occasionally.

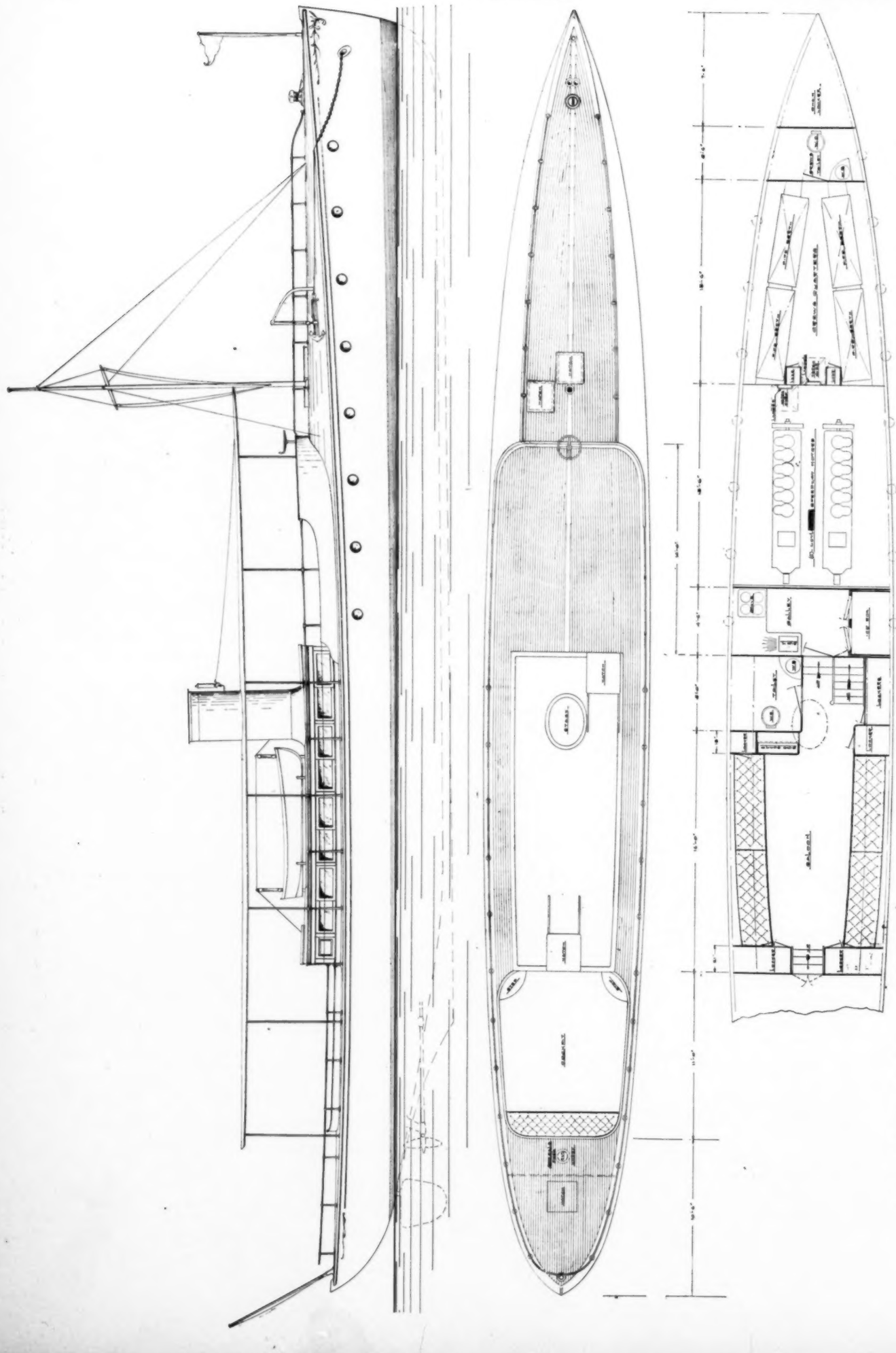
When it comes to choosing motors we have a field for much discussion. Both the two and four-cycle types have their individual advantages in which personal preference plays a part.

The motor should have not less than two cylinders, or more than three, and should develop its power from 400 to 600 r.p.m. To go higher than 600 would be a disadvantage, as the wheel would be small, and inefficient in a big bodied, slow moving boat, besides, when you get stuck in the mud, a high speed wheel won't pull you off. On the other hand, should the r.p.m. be very low, the motor is bound to be very large and heavy.

With a motor showing 8 h.p. at 450 r.p.m., the twenty-five footer should show a speed of 6¾ to 8 miles per hour; the 28-footer a speed of 8¼ miles per hour with a motor developing 12 h.p. at 400 r.p.m.

Don't stow all your ballast along the keel. Only experiment will show the exact distribution of weight, but in general the weight can be well spread out over the bottom.

Last, but not least, if you value your boat, pay strict attention to ventilation of the hull. Leave a generous space between the ceiling and clamps, and around under lockers, so that the air can circulate; nothing will rot a hull quicker than lack of ventilation. A hood ventilator connecting directly with the bilge is an excellent idea, as it is continually forcing fresh air under the flooring. In connection with this, it is well to fit a grating to the hatch opening over the steering gear, thus completing the pure air circuit.



Outboard profile, deck and accommodation plans of the 85-foot ferry launch designed by The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated.

New Motor Boat Designs.

A Fast Ferry Launch.

THE design which appears on the opposite page was lately produced by the Gas Engine & Power Company and Charles L. Seabury & Company, Consolidated, for one of their clients who has a home on the Hudson river. The design was worked out in view of the fact that the boat was to be used as a ferry to make daily runs between the owner's home and New York City, and for this reason was given exceptionally ample deck room, as will be seen in the deck plan.

The forward deck is crowned and is unobstructed from the bow to the rail of the bridge deck; the rise is carried well at the sides, leaving a flat, roomy deck from which to handle anchors, mooring lines, etc. The ample bridge deck extends to the forward end of the cabin trunk, a distance of 14 feet, and is capable of accommodating a large company. This deck is connected by unobstructed passageways, on either side of the cabin trunk, with the cockpit aft. This is ample and provides protection in case of a head wind. Across the after end is a broad seat and aft of this is another deck extending to the stern.

A companionway to the cabin leads from the forward end of the cockpit, and, although the boat was not planned for a cruiser, a glance at the arrangement plan will show that she is equipped so that she may be used for extended cruising if so desired.

The space has been left undivided and thrown into one large saloon, along both sides of which extend wide transom seats. By use of these extension transoms and a system of curtains this saloon may be converted into four separate state-rooms. At either end of the saloon are ample lockers and a sideboard.

Forward on the port side is a commodious toilet room and the corresponding space to starboard is utilized as a passage to the galley and a lobby from which a companionway leads to the bridge deck. The galley is fully equipped with four-burner stove, sink, etc., and with the space occupied by the ice-chest extends the full width of the boat.

Forward of the galley but separated from it by a water-tight bulkhead is the engine room, in which will be installed two 6-cylinder Speedway engines of 125 horsepower each, and this power plant will give the boat a speed of not less than 20 miles an hour.

The forecastle is just forward of the engine room and another water-tight bulkhead separates the two. Accommodations for a crew of four men are provided, consisting of four pipe berths, lockers, etc.

While the details of finish and construction have not as yet been thoroughly worked out, it is planned to construct the hull of wood, copper-fastened in accordance with the usual practice. The boat will carry a signal mast forward, a large ventilating stack, and there will be an awning extending over the bridge deck, cabin trunk and cockpit.

The general dimensions of the boat are 85 feet over all, 11 feet beam and 3 feet 6 inches draft.

Fifty-One Foot Cruiser.

THE design of the 51-footer shown herewith is one recently prepared by the Matthews Boat Company, of Port Clinton, Ohio, and is for an all-around cruiser. The general dimensions are as follows: 51 feet over all; beam, 11 feet 4 inches and draft 3 feet 4 inches. A boat from this design has recently been completed in the yards of the above company and is being used for cruising along the Florida coast.

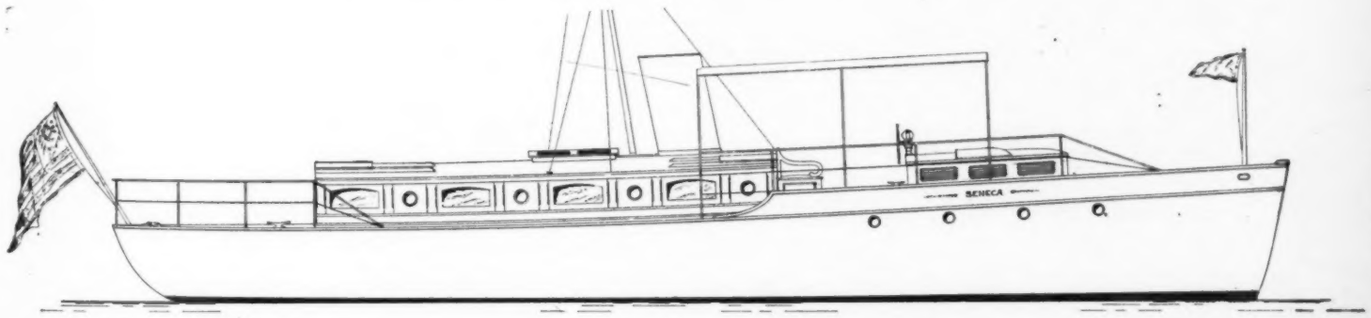
The general construction is of oak with cedar planking, the exterior of the cabin is of mahogany and the decks are teak. The interior of the cabin is finished in white enamel with mahogany trimmings. The crew's quarters and engine room are located forward. In this compartment are two extension berths, one on either side forward, two lockers on the port side and the gasoline tank on the starboard side.

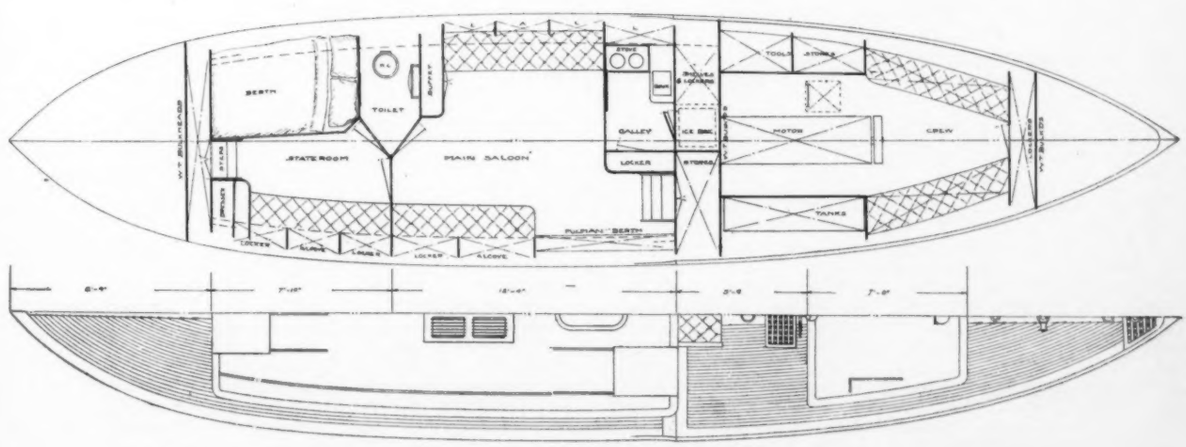
The living quarters are aft and consist of a main saloon, state-room, toilet and galley. The main saloon is provided with two large davenports and a Pullman berth which greatly increase the sleeping capacity of the boat. Aft of the main saloon is a large state-room provided with a double berth, davenport, dresser, lockers, etc. At the after end of the state-room there is a companionway leading to the after deck.

Forward of the main saloon and connected with it by a sliding door is the galley, which is fitted with a two-hole stove, sink and ice-box, which extends the full height and fills the space beneath the bridge seat. The rest of the space beneath this seat is utilized for storage shelves and lockers. The state-room is provided with a double berth, having suit-case locker and drawers underneath, a dresser on the starboard side, a davenport and several alcoves and lockers.

All windows are of the jump and hinge type and are provided with copper screens. The stack is used to ventilate the galley and also as an escape for the engine exhaust.

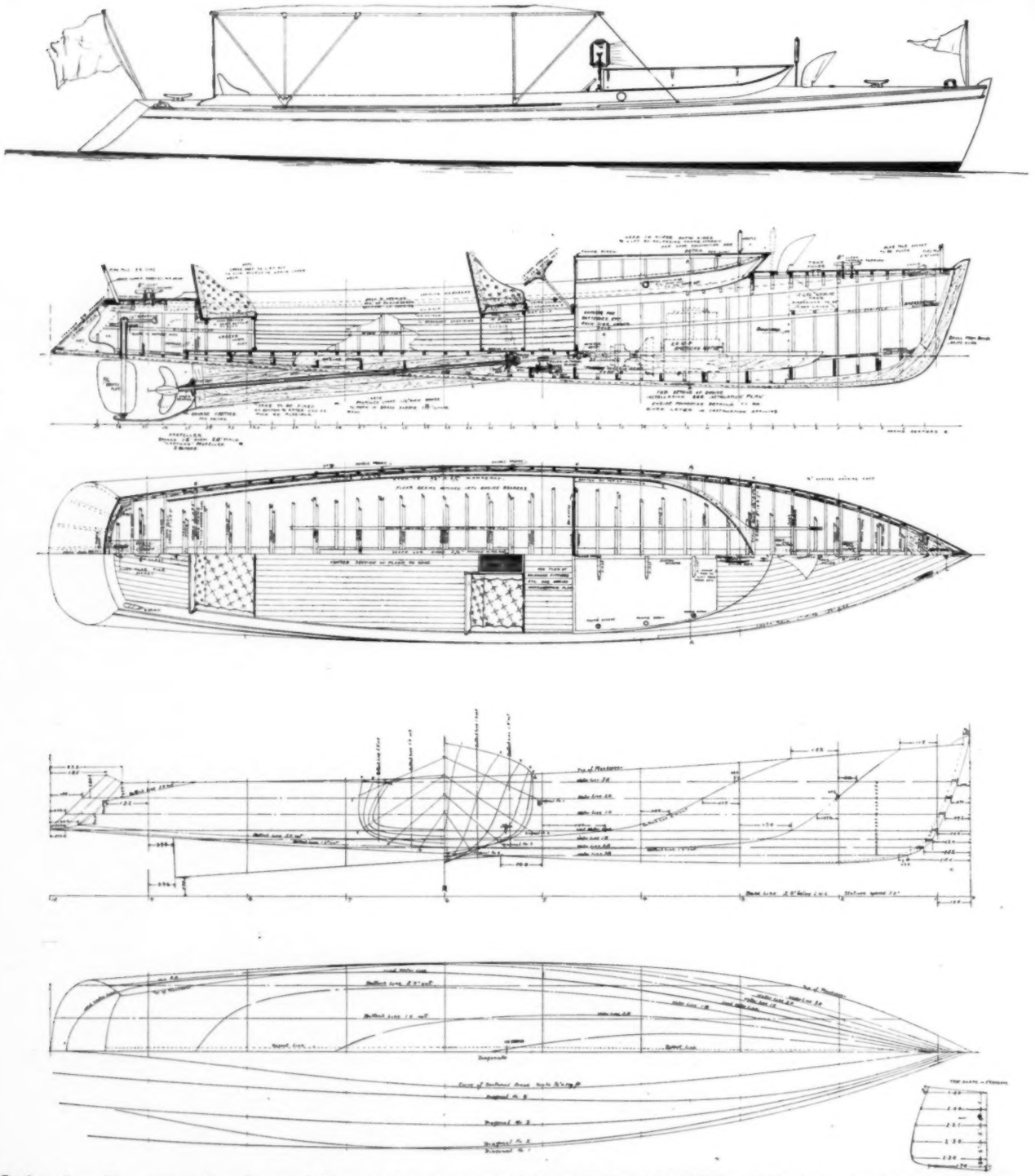
The motive power consists of a 25-horse-power, 4-cylinder, 4-cycle Standard engine, which gives the boat a speed of 11¼ miles per hour. The reverse lever, spark and throttle controls are all mounted alongside the steering wheel, putting the boat entirely under the control of one man.





The 51-foot cruiser designed and built by The Matthews Boat Company, of Port Clinton, Ohio.

Outboard profile, deck and accommodation plans of the 85-foot ferry launch designed by The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated.



Outboard profile, construction plans and lines of the 28-foot speed launch designed by William J. Deed, Jr., for George E. Hibbard, of Boston.

Twenty-Eight Foot Speed Launch.

THE design which appears above is by William J. Deed, Jr., of Boston, and a boat from it was built for George E. Hibbard, of Boston, by the Sheldon Yacht and Power Boat Corporation, of Neponset, for use on Squam Lake, N. H. As will be seen by the lines she is of good model with fine under body, flaring bow and curved transom.

The stem, frames and skegg are of oak and the exterior finish is in mahogany throughout. The engine, a 20-horsepower, four-cylinder Napier, is placed forward under a removable hood and is equipped with a Bosch magneto. Napier lubricating system and a Paragon reverse gear. The cockpit is provided with two transverse seats, popular with this style of boat, and the control levers and steering wheel are brought to the forward bulkhead, so that the boat is operated from the forward seat.

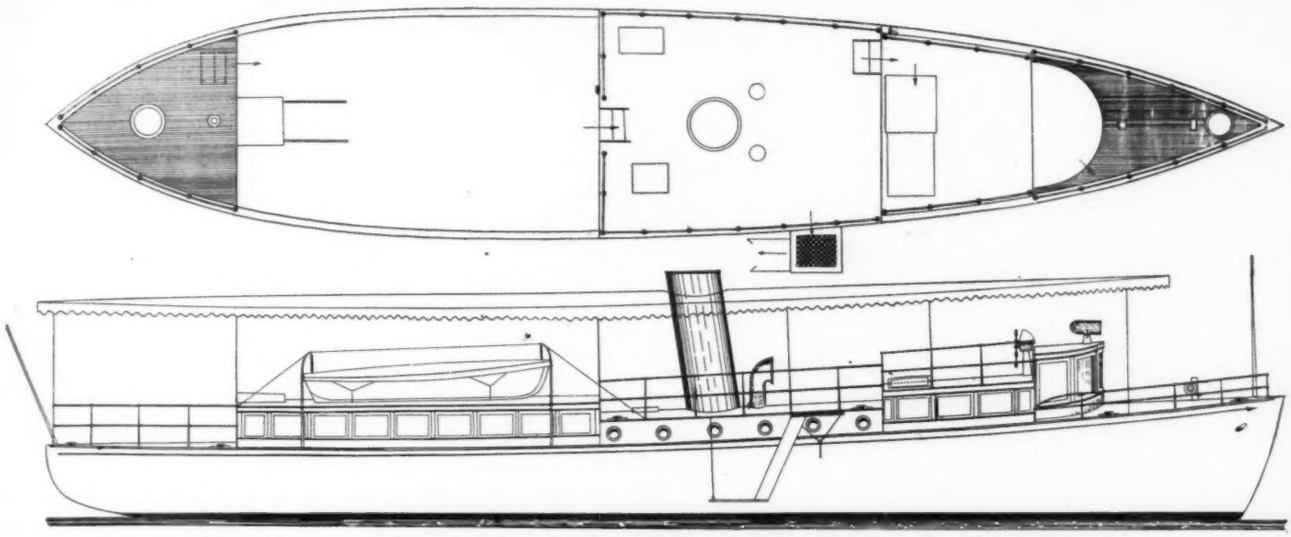
The finish of the under body is in dark green with slightly green tinted topsides and with the decks, coaming, etc., finished in bright mahogany, with nickel trimmings she makes a very attractive appearance. The boat is equipped with a McClellan khaki auto top and carries a Rushmore searchlight.

It was expected by her designer that the boat would attain a speed of fifteen miles per hour, but in reality she goes somewhat above this figure.

Triple-Screw, Shallow-Draft Cruiser.

THE boat whose plans appear on the opposite page has just been completed by the Pope Boat Co., of Fond du Lac, Wis., for an eastern client and in many respects is worthy of notice. As the owner desired to use her for exploring unknown and out-of-the-way places, as the rivers and bayous of Florida, as well as for outside cruising, a combination of shallow draft and seaworthiness was necessary, and the designers have creditably worked out this combination. She is 75 feet over all with a beam of 12 feet.

The power plant consists of three 40-horsepower heavy duty engines, each one installed



The triple screw cruiser of shallow draft designed and built by The Pope Boat Company.

independent of the others and driving a separate screw, which arrangement will prove very desirable both because it makes possible maneuvering in a much shorter radius than is otherwise possible and because it provides three separate cruising speeds, each one at the normal r.p.m. of the engine, by using all three propellers, the two wing propellers, or the middle one. An independent electric lighting plant has been installed, with a capacity of 30 incandescent lamps of 16 candlepower and a 1,200 candlepower searchlight.

There is a roomy bathroom, as well as a toilet room off the forward cabin, and these, together with the galley and engine room, are floored with rubber tiling.

The main saloon will be equipped with four comfortable davenports, and by using these as berths and by the use of curtains this room may be converted into four state-rooms. The finish is in selected Honduras mahogany.

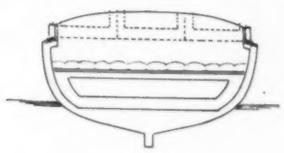
The pilot house is situated well forward and just aft of it is the smoking room, above which is the bridge deck. This smoking room is finished in flemish oak and upholstered in red leather, the engine room, galley and bathroom are finished above the wainscoting in white enamel.

The exterior finish throughout is in quarter-sawed, natural finish white oak. The stack contains the hot and cold water tanks and the air tank for the whistle, besides acting as a ventilating flue for the galley and engine room.

The boat carries an 18-foot power dory and a 12-foot rowing dinghy, and is provided with an awning which extends over practically its whole length.

An 18-Mile Runabout.

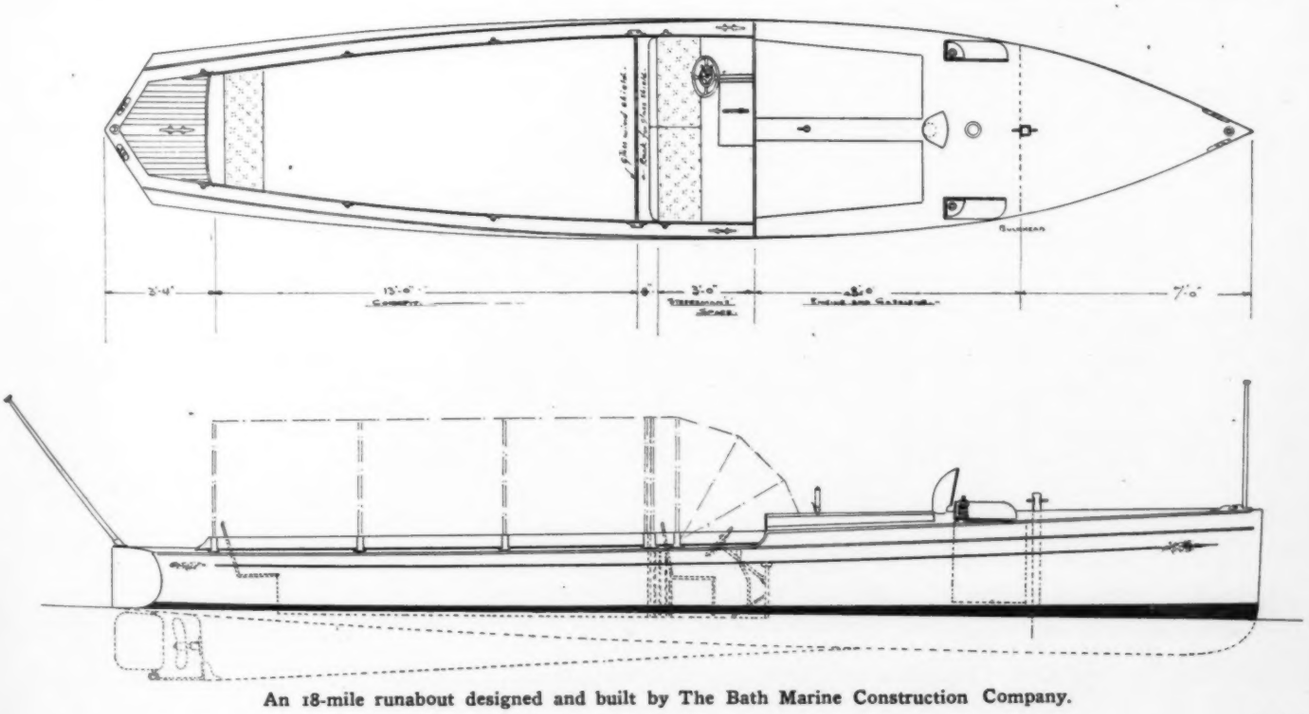
THE boat, the plans of which appear below, was designed and built by the Bath Marine Construction Company for a well-known New York yachtsman who desired a fast boat but at the same time one that would be seaworthy and of strong construction. She is 35 feet over all, has an extreme beam of 6 feet 9 inches, and is equipped with a 32-horsepower French Mors engine of the 4-cycle type, with which she attains a speed of 18 miles per hour.



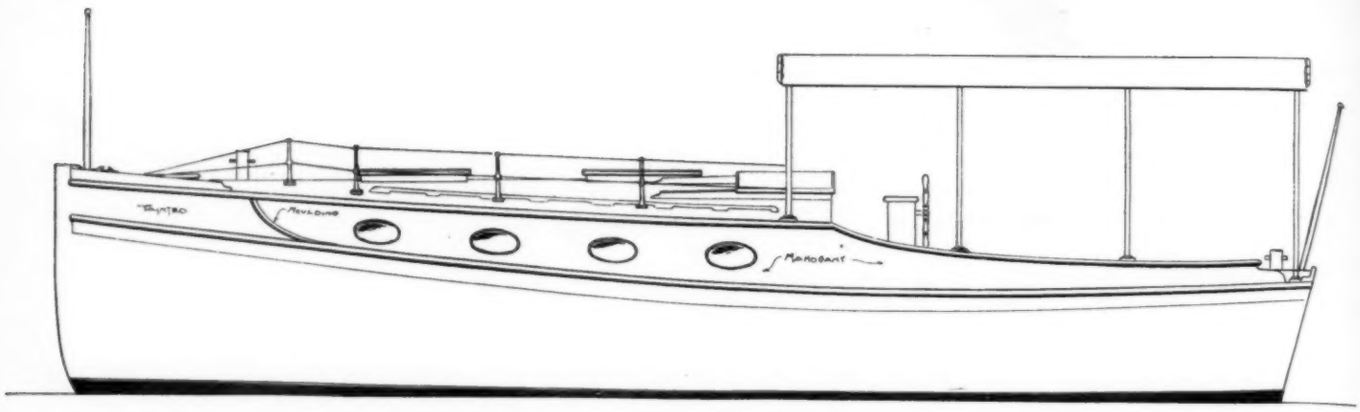
The controls are led to the operating bulkhead so that the steersman has the boat under control at all times. The engine and fuel tank are placed forward, the former beneath a removable hood. A cowl ventilator on the forward deck supplies air to the engine compartment.

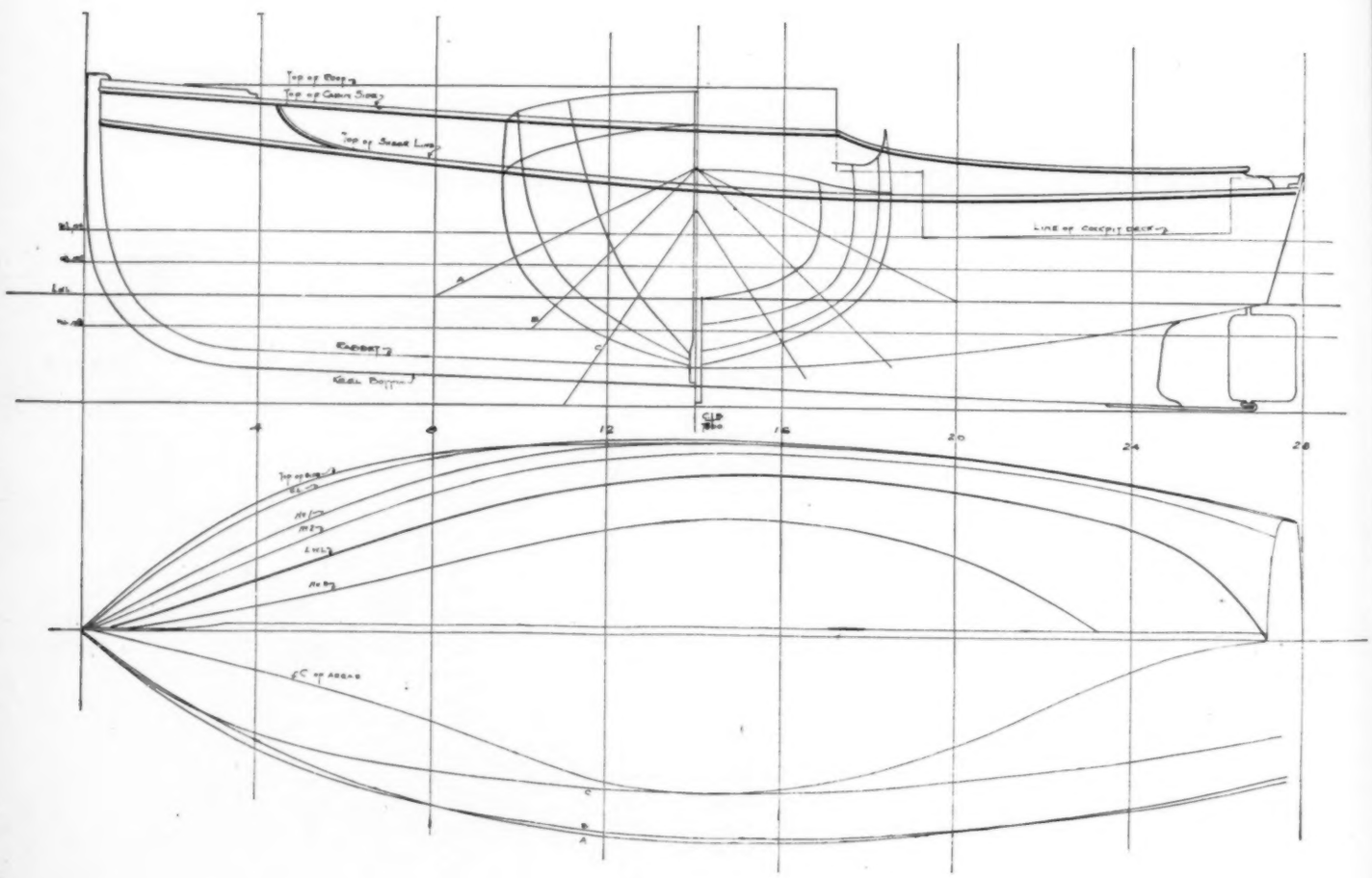
The cockpit is provided with two transverse seats and may be divided just aft the forward one by a glass wind shield. There is ample room for a number of wicker chairs and a folding awning extends over the entire length. The forward end of this awning may be brought down to protect the steersman from rain and spray. The arrangement of the forward cockpit and steering equipment shows the influence of the automobile.

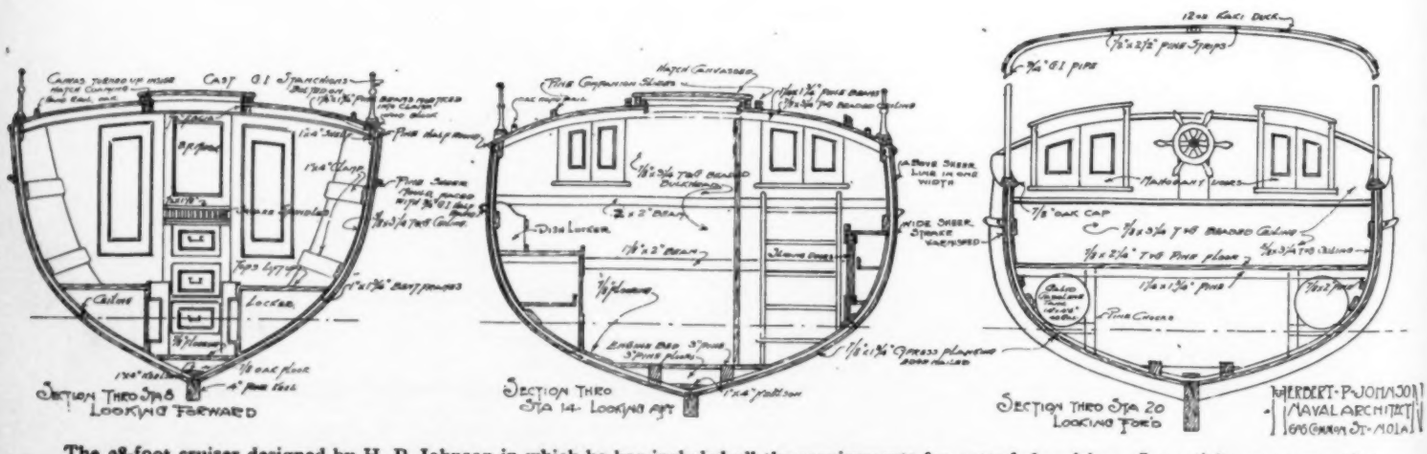
In the design of this boat special consideration was given the problems of buoyancy, wetted surface, skin friction and eddy making resistance in order to obtain the required speed, and the trial trip has thoroughly justified the care taken in the design and construction.



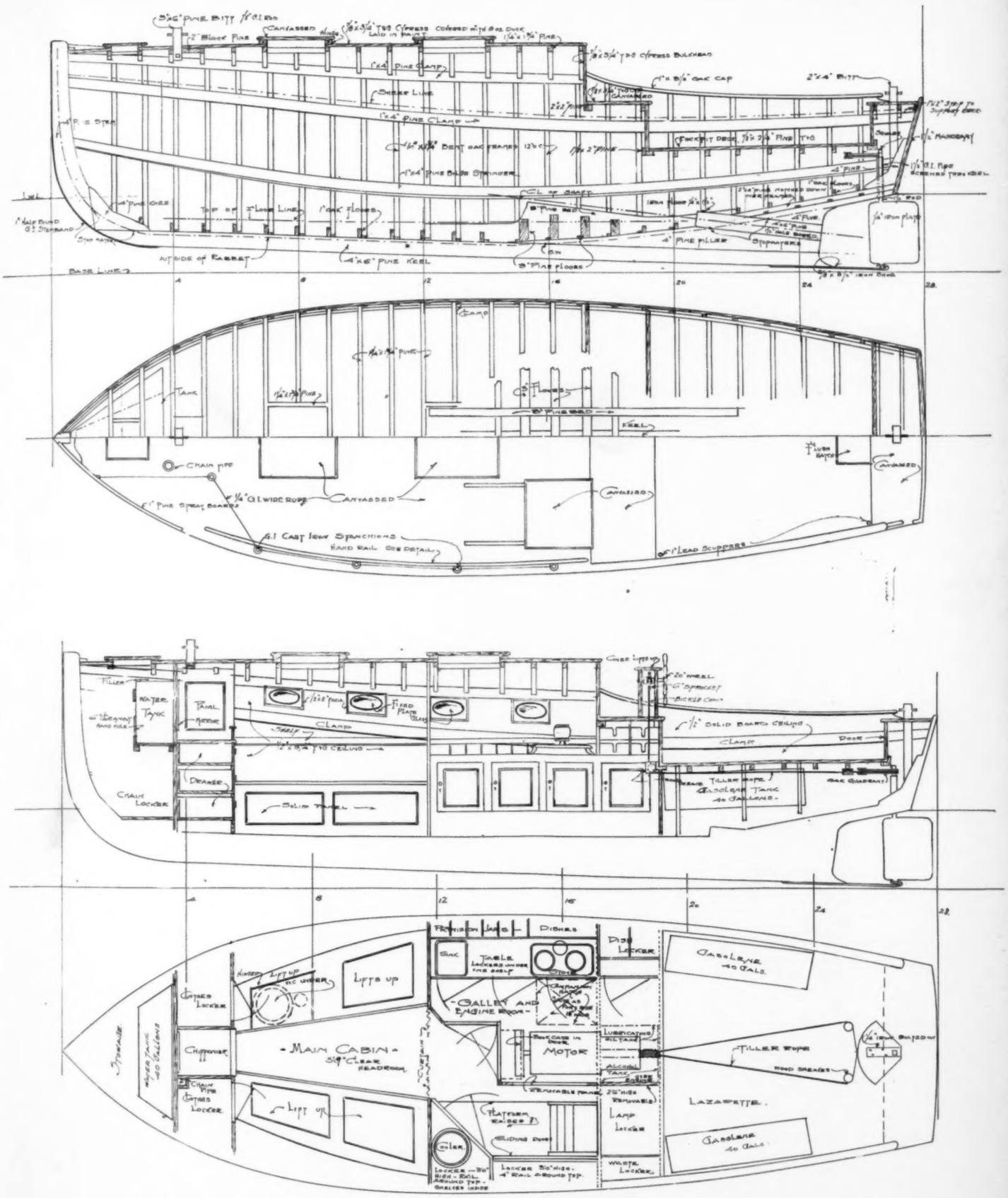
An 18-mile runabout designed and built by The Bath Marine Construction Company.







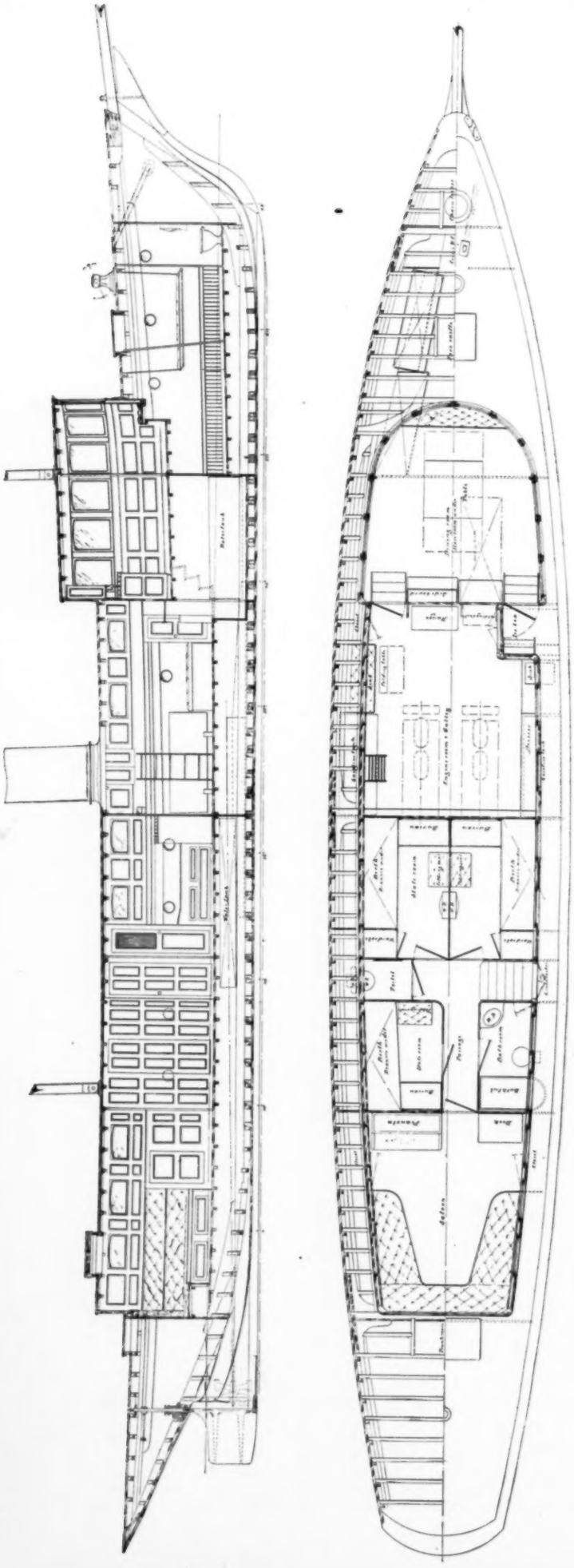
The 28-foot cruiser designed by H. P. Johnson in which he has included all the requirements for extended cruising. **See article, pages 22 and 23.**

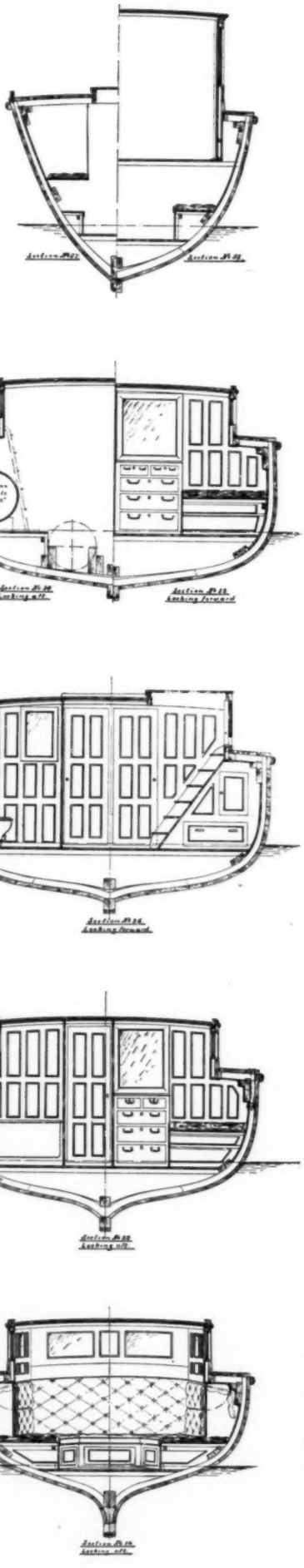


Construction and accommodation plans of the 28-footer designed by H. P. Johnson. See article, pages 22 and 23.

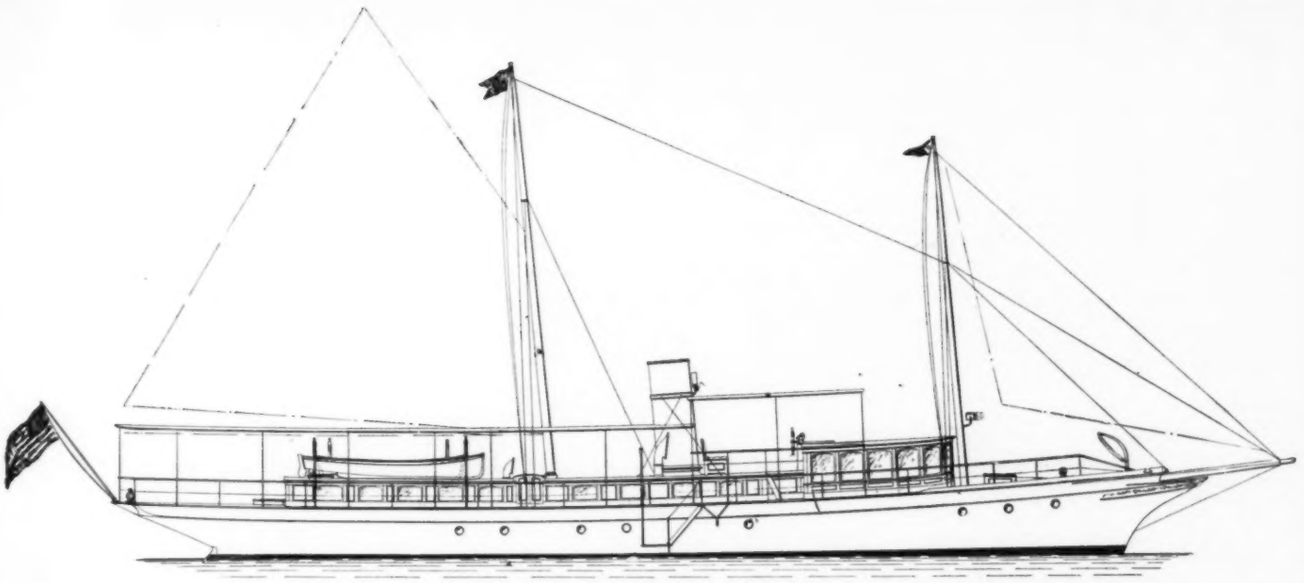
Twenty-Eight Foot Cruiser.

THE plans of the 28-foot cruiser which appear on this and the opposite pages are by H. P. Johnson, and have been worked out in accordance with Mr. Johnson's idea of what a small cruiser should be. While practically the same features may be had in a boat of 25 feet over all, it is hardly practical to go below this length without sacrificing comfort. In an article entitled "What is a small cruiser?" which will be found elsewhere in this issue, Mr. Johnson has given what he believes to be the requirements and the best method of construction for a boat of this type





Accommodation plan, elevation and cross sections of Reomar, the 90-foot cruiser designed by Messrs. Cox & Stevens, the outboard profile and description of which appear on the opposite page.



The outboard profile of Reomar, described below.

Columbia River Cruiser.

THE 50-foot cruiser, the outboard profile and plan of which are shown herewith, was designed and built by Oliver P. Graham, of Portland, Oregon. Although intended principally for use on the Columbia river, the boat is sufficiently strong and seaworthy to withstand ocean cruising.

She is 50 feet over all, 46 feet 6 inches on the waterline, has a beam of 10 feet and a draft of 4 feet. The least freeboard is 3 feet 4 inches.

The keel, keelson, shaft log and deck beams are all of Oregon fir. The frames are of white oak, 2 x 2 inches, and spaced 12 inches apart. The planking is of cedar 1¼ inch in thickness.

The deck from the pilot house is unobstructed and has considerable crown. The pilot house occupies the forward part of the engine room, its floor being raised somewhat above that of the latter. At the after end of the engine room on either side of the engine are the galley and toilet room.

From this point aft the cabin space is utilized as one large saloon, equipped with transom seats in either side, with a capacity, when used as berths, sufficient to accommodate six persons. Aft of the cabin there is a cockpit, and the cabin roof is utilized for deck space. The floor of the cockpit is well above the waterline and is provided with ample scuppers. Forward of the skeg, the keel is cut away, permitting a run of solid water to the propeller. The power plant consists of a 60-horsepower, 6-cylinder Lamb engine of the 4-cycle type, which gives the boat a cruising speed of 14 miles an hour.

The fuel tanks, which have a capacity of 300 gallons, are located forward, and the water tank, the capacity of which is 75 gallons, is amidships.

The boat is lighted throughout by electricity. The interior finish is in Spanish cedar while that of the exterior is in oak.

With its high freeboard, raking, flaring bow, strong construction and protection for the steersman this boat should prove a comfortable and seaworthy one in any kind of weather she is likely to encounter.

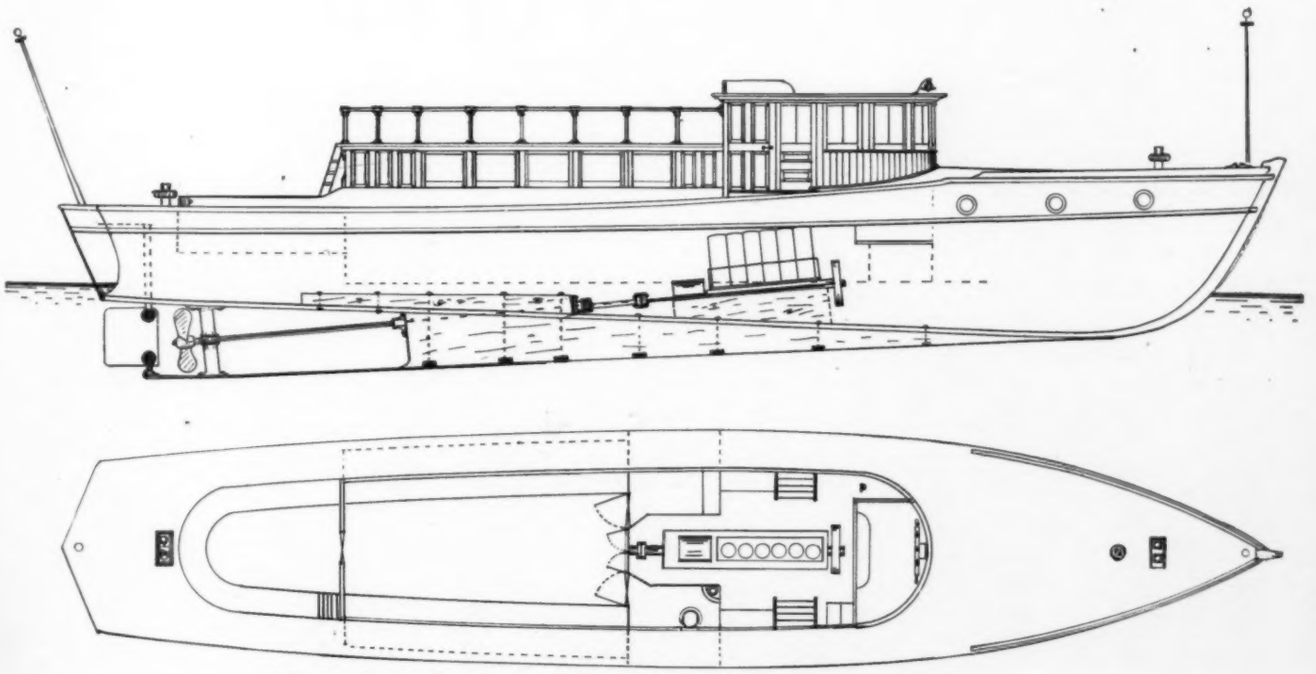
Reomar, A 90-Foot Cruiser.

The accompanying plans show a 90-foot motor boat recently completed from designs by Messrs. Cox & Stevens, at the yard of the New York Yacht, Launch & Engine Company, of Morris Heights. The owner of this boat, Mr. R. E. Olds, is a western yachtsman, who will use her for the most part in the South and for this purpose the draft has been kept very light and special attention has been paid to securing good ventilation.

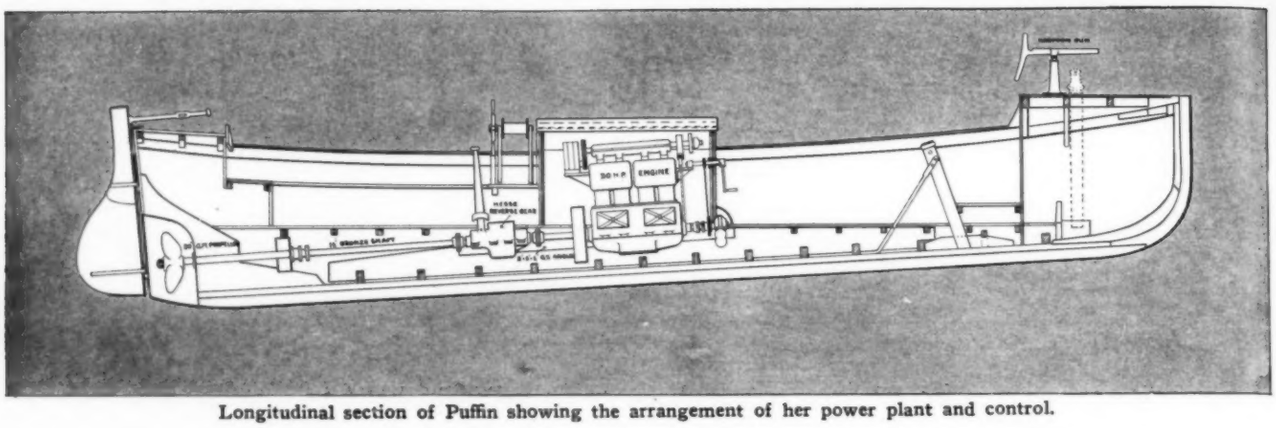
Reomar is 91 feet over all, 74 feet 6 inches on the waterline, has a beam of 14 feet 6 inches and a draft of 3 feet. The plans show a trunk cabin craft with clipper bow and overhanging stern. The ends are well proportioned, and with the good freeboard and low trunk cabin make an attractive looking vessel, with the appearance of a small steam yacht.

Two pole masts are fitted as shown, arranged to hinge down to allow the vessel to pass under bridges in the canals. Arrangements are made for carrying sail, so that, if

(*Continued on page* 48)



The 50-foot cruiser, designed by O. P. Graham, for use on the Columbia River.



Longitudinal section of Puffin showing the arrangement of her power plant and control.

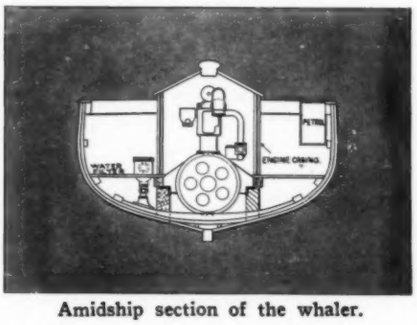
Puffin—The Motor Whale Boat.

By William Parker.

THE idea of building a power boat of reasonable size which would give sportsmen a chance of seeing some whaling without the elaborate outfit necessary to equip a regular professional whaler of large size resulted in putting the Puffin into commission in the autumn of this year. The schools of whales which frequent the seas between the northern shores of Scotland and the Greenland coast are by no means as easy a prey as they used to be a few years ago. In the rough old days when rowing boats and hand tackle were universal the sport was one of the finest known, and there was more than a spice of danger to make it appetising.

The old whaler kept her boats always ready for the shout from the lookout in the crow's nest and half a dozen boats with eight or twelve experienced oars each set off in quest of the big game. The whale was harpooned by hand and the fight once begun meant often an entire day of constant excitement and struggle, and the combat carried the boats, which clung together as much as possible, many miles from the ship. However splendid the sport was, it was bound to be improved out of existence by modern commercial methods, and the old game is now seldom or never played. Steam whalers of 300 tons are far superior to the old ships and the harpoon is shot either from the bow or the masthead by spring guns which carry considerable distances.

Another method is very often employed, using a percussion shell which carries a light chain and bursts on impact with the fish, making an internal wound which soon puts the whale hors-de-combat. As a rule his run is short and the strength and weight of the tackle used allow of more summary methods than the small open boats could use. It is commercial but, after a few experiences, not exciting—too one-sided a fight and too much a dividend-paying proposition to rouse one's fighting instincts. This being the case there was only one thing to do if one was to go after whales for sport, and the Puffin was put in hand, the designs being worked out by Mr. Worby Beaumont, the English engineer whose large experience with motor boats made his suggestions valuable. The nearer the old-fashioned open whaling boat could be imitated the better, and hence her dimensions were kept low enough to make her handy under all circumstances while her power plant and harpooning machinery were as modern and efficient as could be constructed consistent with their small size. Whether the combination will realize its designer's intentions, it is yet somewhat early to say. She has had only a few runs to her credit as yet and luck in the whaling fields was poor on these occasions, but so far as her sea work goes she has easily maintained 12 miles per hour in average weather. Carvel built, 28 feet in length with a 7 foot beam and a draft, fully loaded, of 2 feet 8 inches, the vessel is constructed for seaworthiness rather than speed. The hull does not differ greatly from the ordinary, the timbers are of ash with fir planking, but the construction of the bows is unusually strong for obvious reasons. The boat is open with the exception of the bow and counter and the motor plant is amidships. The motor itself is of the 4-cylinder vertical type, 25 h.p., and constructed by Messrs. Mandslay. The cylinders are cast in pairs with ample water jackets. The valve mechanism and camshaft are overhead. The shaft is enclosed in a hinged casing which can be thrown back and at once exposing the valves and valve boxes for inspection. This is driven through skew gearing from the crankshaft, and is of case hardened steel with a universal joint at its upper end, the whole being completely cased in. The large gunmetal carbureter is also enclosed and there are two ignitions by magneto, which lies high and is operated through spur gearing from the overhead shaft and by battery and coil. A water supply from the jackets is used to cool the exhaust and the lubricating oil supply also in its passage. The motor is bedded in such a way as to allow of easy access to all the working parts, and the entire operation of the power plant is carried astern to a set of levers very compactly placed at the steersman's hand. The propeller shaft carries a Hesse and Savoy reversing gear, and the normal speed is about 600 revolutions per minute. A notable point is the entire exclusion of aluminum which is unsatisfactory on account of its setting up a galvanic action with sea water. Gasoline is carried sufficient for 200 miles. The experiment of using heavier fuels is to be tried,



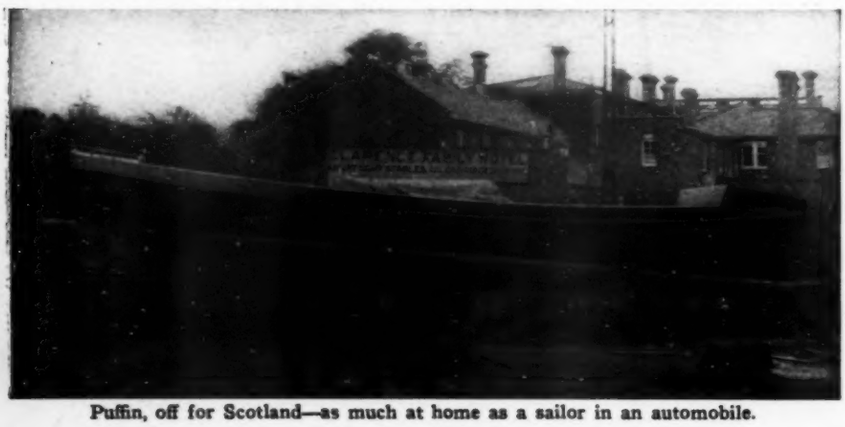
Amidship section of the whaler.

but has up to now been found unsuitable with this particular type of motor, and though very economical, the leakage into the bilge is a serious drawback, the least trace of paraffine leaving, it is scarcely necessary to say, a powerful and unpleasant smell which it is almost impossible to get rid of.

The motor and its housing divide the cockpit into two parts. The after part is arranged with seats at the side and end, and the steering reverse and control apparatus is just abaft the engine housing leaving the forward cockpit clear for the handling of lines, etc.

The whaling plant consists of a harpoon gun placed in the bows besides a shoulder-gun and a large supply of tackle. The motor being always well below its maximum capacity is very uniform in operation and, particularly at slow speeds, is almost absolutely silent in running, the boxing-in of all the working parts contributing to this.

A boat of this size and type would be ideal for such classes of game as tarpon or for porpoise fishing. It remains to be seen how she behaves with bigger game, but her steadiness at sea has been fairly demonstrated and her hardiness is beyond question. She can be stopped within a few yards and turned about almost within her own radius, while her speed can touch 14 miles an hour when occasion demands it.



Puffin, off for Scotland—as much at home as a sailor in an automobile.

Planking Methods and Materials.

The Advantages of Carvel, Lap Strake and the Other Kinds for Different Hulls and Services. A Discussion of the Woods Used and the Work for Which Each is Suited.

By Gerald T. White.

WHEN Noah reached the planking stage in the construction of the Ark, he was undoubtedly pestered by scores of friends who called him aside and told him confidentially that he was making a mistake in using whatever wood he used for planking, and, here they whispered cautiously that he should have used—well, something entirely different. Whether he took someone's advice or whether he stuck to his own notions is not chronicled, but whatever he used was a success as everyone knows.

Ever since Noah's day there has been the same discussion regarding planking, and many friendships have been broken, to say nothing of heads. So it is the writer's hope that this article may probably help some harassed individual to decide how he is going to plank his new boat.

In motor boat work the woods used for planking range from the softest cedar to the hardest teak and each of the different woods is especially adapted to some particular requirement of hull.

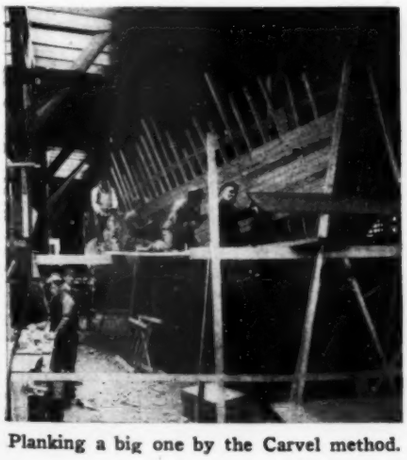
In the eastern part of the country the wood used in the majority of boats up to 100 feet in length, and in some cases on boats even longer, is white cedar. This wood is light, easily worked, and will take a smooth finish if properly planed and sandpapered.

In the West one will find that cypress is used to a great extent instead of cedar. Cypress will absorb more water when immersed than cedar, so that a cypress planked hull that has been in the water a short while will weigh considerably more than if it were planked with cedar. In most sections of the country cypress is a little cheaper than cedar, so that where expense is a consideration, and where extreme light weight is not desired cypress will be found to answer the purpose very well.

White pine is rarely used, although it is very easy to work. It is expensive and like cypress it will absorb a great deal of water, which greatly increases its weight.

In large boats there is probably no wood more adaptable for planking than yellow pine. It is much stronger than either cedar or cypress and a hull planked with this wood is almost indestructible. It can be obtained in long lengths, which is an important item in large boats.

Oak is a wood that is adapted to most any part of a motor boat other than planking. Some of the large sailing vessels are planked with oak, but it is too heavy for the average motor boat, and also has the disadvantage of shrinking more than any of the other woods when exposed to the sun and air, so that a boat planked with oak and hauled out will often shrink so that the caulking cotton will drop out of the seams. The garboard, or plank next to the keel is sometimes made of oak so as to strengthen what is usually the weakest spot of a hull. Of course this plank is always submerged unless the hull is hauled out, and even then being under the boat, does not get the direct rays of the sun and so does not shrink as much as if it were on the upper part of the hull.



Planking a big one by the Carvel method.

Caulking the Carvel job.

If expense is of no consideration one has the choice of mahogany, Spanish cedar or teak for planking. Mahogany weighs more than white cedar when in the board, but absorbs so little water that after a while a cedar boat will be as heavy, if not heavier than one built of mahogany. This wood is of course usually finished bright; it is very strong, fairly easy to work and is very lasting. It is used mostly on speed boats because of its light weight, and on yacht tenders because of the beautiful finish that can be given it.

It takes an expert to tell the difference between Spanish cedar and mahogany, as they are both of the same color and are nearly alike in grain. Spanish cedar is a little softer and lighter than mahogany and is often used on speed boats where extreme light weight is required. It is hard to obtain this wood in some parts of the country, and this may be the reason that it is not more generally used.

The only other good planking lumber is teak. Of all the woods used for planking none is so hard to work as teak, which will take the edge off a plane as fast as the tool can be sharpened. This very hardness makes it almost indestructible, so that a teak boat can be relied upon to last as long as its owner wants to use it. It is the most expensive wood used in boat work. On account of the difficulty in working it, the labor charge is high, and consequently it is only used in boats whose owners desire the very last word in elegance and strength.

It is quite heavy but on account of its strength can be used thinner than other planking woods, and in that way it partly makes up for its weight. It finishes a dark brown with beautiful graining, and even after much use it can be scraped and revarnished without showing a trace of usage.

Having discussed the various woods used in planking it may surprise some to know that there are seven different methods by which the planks can be put on the hull.

The commonest method is called the carvel or smooth strake planking. Fig. 1 shows the section of a boat planked by this method. The bevel of the seams has been accentuated in the drawing to show that the seam should be tight on the inside and open on the outside, making a V-shaped opening into which the caulking cotton can be hammered. The drawing also shows how the fastenings through the timber are countersunk so that a wooden plug can be driven in after the nail is fastened, and cut off flush with the outside of the hull.

In carvel planking the planks are fastened to the timbers in one of three ways. A copper nail can be driven through the timber and riveted over a burr or washer on the inside, as shown in Fig. 1. Or a galvanized iron or copper nail that is ¼ inch or ⅜ inch too long can be driven through the timber and clinched over flush with the inside. The other method is to screw the planks to the timber, with either galvanized iron or brass screws. The riveted method is one that is used the most as it is as strong as any of the three and is cheaper than screws. The advantage of screws is that in case a plank is damaged and a new one is to be put in it is easier to take out the screws than it is to cut off the heads of the rivets. Amateur boat builders also find screw fastenings an advantage, as one man can fasten off a whole boat, while with the riveted method it takes one man to "hold on" with a heavy iron on the outside while another man rivets the nails on the inside. It also is no easy job to rivet a boat up properly, as unless it is done just so the boat will leak.

The carvel method of planking is suitable for all sizes of motor boats, and is used in the great majority of cases.

Another style of planking that is often seen is called lap strake or clinker. (See Fig. 2). This style doesn't look quite as shipshape as the smooth plank but it has the advantage of being tighter and less liable to shrink up if left out of the water for any length of time. For this reason it is nearly always used on tenders that have to be hoisted up on davits most of the time. There is no caulking to be done on a boat built this way except along the keel. Clinker planking can be fastened to the timbers, in the same manner as carvel, but the nail heads are usually left flush with the outside of the plank, as these boats cannot be rounded up with a plane, and in most cases lap strake planking is so thin that to countersink the nail heads would seriously weaken the plank. The laps are riveted together with either two or three rivets between each timber, this makes a fastening every two or three inches along each lap, and if correctly done a boat built this way will be perfectly tight. Boats can be built very tight with this system, but of course it is out of

Lap strake planking is used on the little fellows.

the question for speed boats, as the skin friction is greatly increased.

Planking less than ½ inch thick cannot be caulked, and so some system had to be devised to make speed boats tight without caulking. Lapped strakes were out of the question, so that several other methods were brought out. Of these the one which is used the most in this country is known as the seam batten system.

Fig. 1.—The majority of cruisers are planked by the Carvel method.

By reference to Fig. 3 it will be seen that a jog is cut in the timber where the seam of the plank to be put on, is going to come and a long batten, usually of white pine, is run through these jogs from stem to stern. The planks are then put on and fastened to the timbers in the usual manner and between the timbers are either riveted through the batten every few inches, or are screwed from the inside with small brass screws run through a small washer. Fig. 4 shows both methods of fastening the plank edges to the batten. This method permits of using planking as thin as ¼ inch and keeping it tight.

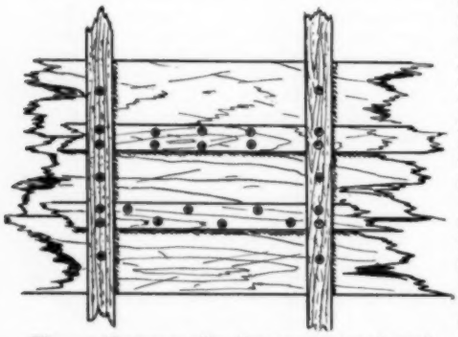


Fig. 4.—Between ribs the seams are riveted to the battens.

Some of the larger speed boats have what is called double planking, which is partly explained by its name.

Reference to Fig. 6 shows that the inside planks are put on and covered with either canvas or oiled silk and then the outside planks are put in place so that the seam of one layer alternates with those of the other.

These planks are fastened to the timbers in the usual manner, and are either screwed or riveted every few inches between the timbers, so as to fasten the two layers of planking solidly together.

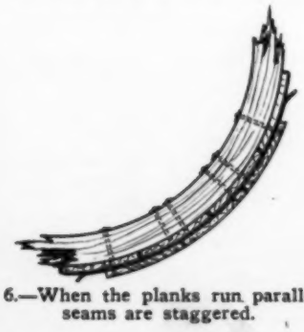


Fig. 6.—When the planks run parallel the seams are staggered.

All the planking methods that have been mentioned so far are for boats that have the timbers running at right angles to the keel. Now in some speed boats the timbers, or stringers, as they are then called, run parallel to the keel from stem to stern. This method is only used on moats that are divided by bulkheads a short distance apart. The stringers are bent around these bulkheads and fastened. The first layer of planking is then put on (see Fig. 5, which shows a section of the outer, or fore and aft planking, cut away to show the inner or diagonal planking). After the diagonal planks are put in place and tacked to the stringers they are covered with canvas or oiled silk and then the outer planking is put on in the usual manner and fastened through the stringers and through the inner planking at frequent intervals between the stringers.

Fig. 2.—The clinker method is never used on the larger boats.

This method, which is used on nearly all the smaller racing boats in both Italy and France and on a few boats in this country, has the advantage of being the lightest of the various systems of planking.

The necessary extra labor which "seam batten" and "double" planking in its various systems entails makes it rather expensive when compared to the ordinary carvel method, but for boats that are to be planked with wood less than ½ inch thick, it is absolutely necessary to provide some way of closing the seams with a solid backing.

Some of the older speed boats had canvas stretched over the timbers before the planks were put on. The planks were then put on and very lightly caulked, the canvas preventing the cotton from breaking out the plank on the inside. This method was satisfactory for a while but water would leak in between the canvas and the plank and as no air could get to it, there was a tendency to rot the wood.

Of course the ordinary canoe construction can be applied to motor boat work, and it is very light and satisfactory for small speed boats. But as the canvas cannot be given as smooth a finish as hard wood, it is not so suitable for the extremely high speed boats. Although for small speed and semi-speed boats it is almost the ideal planking, as it is easily repaired if damaged, it is cheaper than any of the double plankings, and for amateur work is about the easiest possible construction. The thin planking which backs the canvas does not have to be as carefully fitted as in the other methods, for the canvas will keep the boat tight even if there are a few small cracks in the planks.

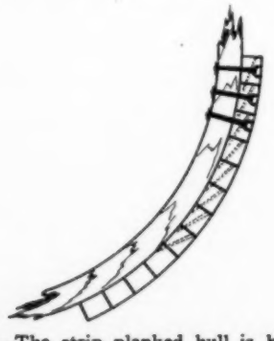


Fig. 8.—The strip planked hull is hard to repair.

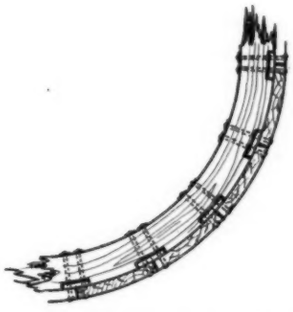


Fig. 3.—Battening the seams permits the use of thinner planking.

There is one more method of planking for speed boats which has been used so little in this country that very few have ever heard of it. It is simply the ordinary carvel plank with a groove cut in one edge of its length, this groove is filled with a roll of lamp wick or caulking cotton (see Fig. 7a) and then the next plank is put on and wedged up against the cotton. This method can be used on planks as thin as ⅜ inch. A development of this system has been used in Europe and consists of cutting a tongue on one plank to fit in the groove of the other, in the same manner as the ordinary tongue and groove staving (see Fig. 7b), used so much on boats for bulkheads, lockers and cabin roofs, only in planking there is a small cord of lamp wick laid in the groove before the tongue is put in. This system has the disadvantage of making it impossible to renew a plank without taking off all the other planks above it. This is a serious objection, as in speed work it is no uncommon thing to repair two or three planks a season, and often this work must be done in a hurry.

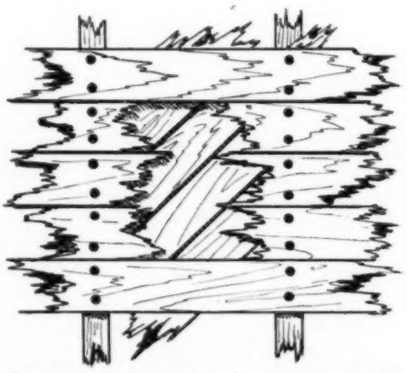


Fig. 5.—Double planking is strong and light but quite expensive.

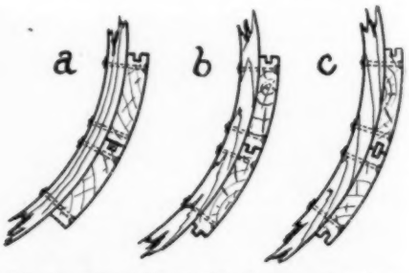


Fig. 7.—In *a* the caulking cotton is laid in the groove; in *b* and *c* white lead is used.

(*Continued on page* 48.)

Letters From Motor Boating Readers.

The columns of Motor Boating *are open to its readers, not only for asking questions, but for placing before the other readers ideas, results of experience, opinions, etc., that should be interesting or helpful to them, but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make an answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letters and answers where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through the correspondence department subscribers to* Motor Boating *may be of direct aid to one another in solving the problems of motorboatmen.*

How Fast Can a Motor Boat Go?

To the Editor of Motor Boating, *Sir*: In answer to yours of recent date, I would say that each year motor boats are being driven at speeds relatively, and actually, faster than the previous year. In some cases an entirely new outfit brings about this excess speed, in others either a new propeller, a new, improved hull with the old engines, or new, more powerful engines in the old hull. But there comes a time when, with any one combination of hull, motor, and propeller, additional speed cannot be made. The combination has reached its speed limit. When this is the case the hull is as near perfect for the work as is possible, the motor is working at its greatest efficiency (but using 15-20% of the power in the fuel), and the propeller is using, say, 75% of the power developed by the motor.

It is the fact that the propeller end of the combination in efficient installations is so much more perfect than the motor in using the power given it that leads me to think that the jet propeller will hardly displace the screw. There are heat losses which must take place in the motor, yet I believe that the engine builders, by taking any liberties with the present motor that is advisable in the way of a more powerful outfit, can pave the way for greater speed than we think possible. Rules should not block the march of progress, such as in the case of Chip II.

In the development of the Dixie III there is a lesson which would lead me to say that, while the hull may be improved and refined, great stress must be laid upon getting the power with the minimum weight. A launch of the present inverted wedge type, with its variations, and using a moderate hydroplane effect can hardly be improved upon for all-round service.

Let the engine builders turn out the best they can with untied hands, give the designing of hull and every detail into the hands of a competent naval architect, and put enough money into the game, and the results will be forthcoming. Money is, to great extent, the limiting factor.

I think 40 miles will be obtained in the next International Race, but above that it is impossible to say. W. J. Deed, Jr.

Boston, Mass.

Uses for Ground Cork.

To the Editor of Motor Boating, *Sir*: I explain here some of the uses of ground cork.

I have found in the past in looking over motor boats that the batteries as general thing were kept in very poor condition in damp lockers or exposed places. By taking a box such as Perry Davis Pain Killer comes in, which will hold ½ dozen dry batteries put in about 1 inch deep of cork in the bottom and set in the batteries then put the cork around and shake it down until the box is full, you will find you will have a sure preventive from dampness. It is cheap and the best preservative I have found. This cork can be procured at any store where fruit is sold; it comes as a packing for white grapes and is generally thrown away after the fruit is sold.

You will also find it useful to make fenders out of, which can be used as life preservers. I carry two on my 19-foot boat hung on a short rope over the side of the boat, so it can be thrown in a second. I will give you an idea how to make them. Cut some 8 ounce canvas in as large a circle as wanted and sew it so as to leave a good seam. Leave one place open about 3 or 4 inches; then turn it right side out and then sew a double seam twice around close to the edge. Now put in the cork and pack it with a small round stick just as hard as you can. When full sew up the opening, lay down on the floor or bench and beat it with your hands until you have it nice and even, then paint it with about four coats of paint, let each coat get good and dry before putting on the next one. The edge may be bound with ¼ inch rope if desired.

Wm. J. Young.

Providence, R. I.

A Motor Duck Boat.

To the Editor of Motor Boating, *Sir*: Thinking that this information may be of interest to your readers I am sending it herewith.

I recently installed a one and three-quarters horsepower Dun motor in what is known as a Currituck skiff with dimensions as follows: 18 feet over all, 3 feet 6 inches beam and 4 inches draft. I put on a skeg or "dead wood" which increased the draft to 12 inches aft. Planking of this class of boat is 1 inch throughout. I installed motor in the usual way aft except that I ran all cooling water through the expansion chamber which certainly kills the noise; batteries, coil, etc., I keep in a tight wooden box which can easily be removed and in which no amount of spray or rain can wet them. I made a spray hood of canvas which is very simple, the frame consists of two light wooden rods 4 feet long with their upper ends bolted together so that when the lower ends are set at opposite sides of the skiff floor, the upper ends form a notch; a ridge pole 7 feet long rests in the notch aft and in a hole in the forward coaming, over this I stretch the canvas and button around the outside of the coaming on buttons such as are used for carriage curtains. Such a boat costs only about $75. I carry 75 decoy ducks and a float blind and am able to run in 1 foot of water, and while the speed is only about six miles per hour I find it far ahead of the same boat under sail.

C. J. Foulke.

Calolla, N. C.

Concerning Hydroplanes.

To the Editor of Motor Boating, *Sir*: In a recent article on hydroplanes a curious fact is stated and the impression left on the mind of the reader is that it cannot be explained except by supposing that the atmospheric pressure has something to do with it. The fact referred to is that the forward part of the hydroplane may be unsupported and this unsupported portion may include the center of gravity.

In the article no mention was made of the propeller and its position. The fact that the plane is driven by a deeply immersed propeller explains the phenomenon completely.

When the propeller begins to revolve and exert power its forward thrust is almost balanced by the resistance of the hull. As the speed increases the resistance of the water decreases, as the hull is pushed upward and out of it. A point is reached where the resistance falls off to a very considerable degree. This is the fact that has been noted in connection with boats of ordinary form. For a time the resistance continues to fall off as the speed increases but then begins to rise again and finally, if the speed is increased sufficiently, reaches and passes the former amount. Hydroplanes probably follow the same law till they reach a point where the center of gravity is supported at a point forward of the point where the hull first touches the water.

After a boat of the ordinary form reaches what some call the "critical speed" she slides upon the "wave of translation" and for that reason moves easier. For the ordinary boat there are three different speeds at which the horsepower is the same.

When the hydroplane has the center of gravity supported in the air, the thrust of the propeller and the resistance of the immersed portion of the hull form an unstable couple. This might be expected in rough water to make a hull dive and recover itself if it has sufficient buoyancy.

M. Partridge.

New York City.

The Prize Contest.

To the Editor of Motor Boating, *Sir*: Concerning the engine contest of the issue of December, 1909, I do not agree with you as to the prize winner, W. H. H., Jr., Baltimore, Md. I do not wish to criticize the gentleman personally, but I start this argument for the good of the sport. The article offered by C. Peterson, Brooklyn, N. Y., appeals to me as a first place winner. Mr. W. H. H., Jr., does not mention anything about removing carbon, which will accumulate during the season's use, and in most cases cause the top ring to stick, and should be removed before next season's work. Also he advises viz: clean all the interior parts of the engine as thoroughly as practicable and squirt in cylinder oil, etc., and later on says open hand plates and remove cylinder head. How does he expect to clean the interior parts without taking engine apart in the first place? Removing flywheel and storing it in the boat is the same as to leave it on the engine, the weight will be just the same on the boat. If much oil leaks from the crank chamber some vessel should be placed to catch the drip. How could anyone expect an engine to run the following season if the crankshaft bearings would not hold oil from running out in cold weather. I would say that the bearings should be examined and if worn to that extent take them out and replace with new ones. I do not wish to knock, but the article from Mr. Peterson looks good to me. W. H. Ellison.

West Philadelphia, Pa.

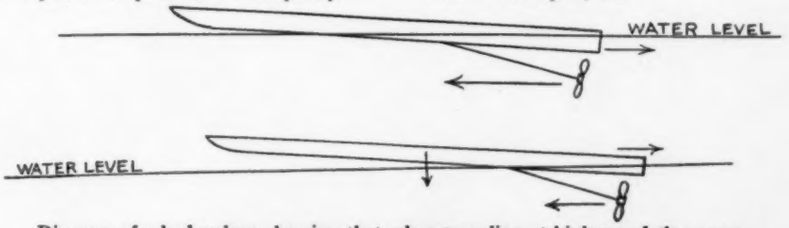
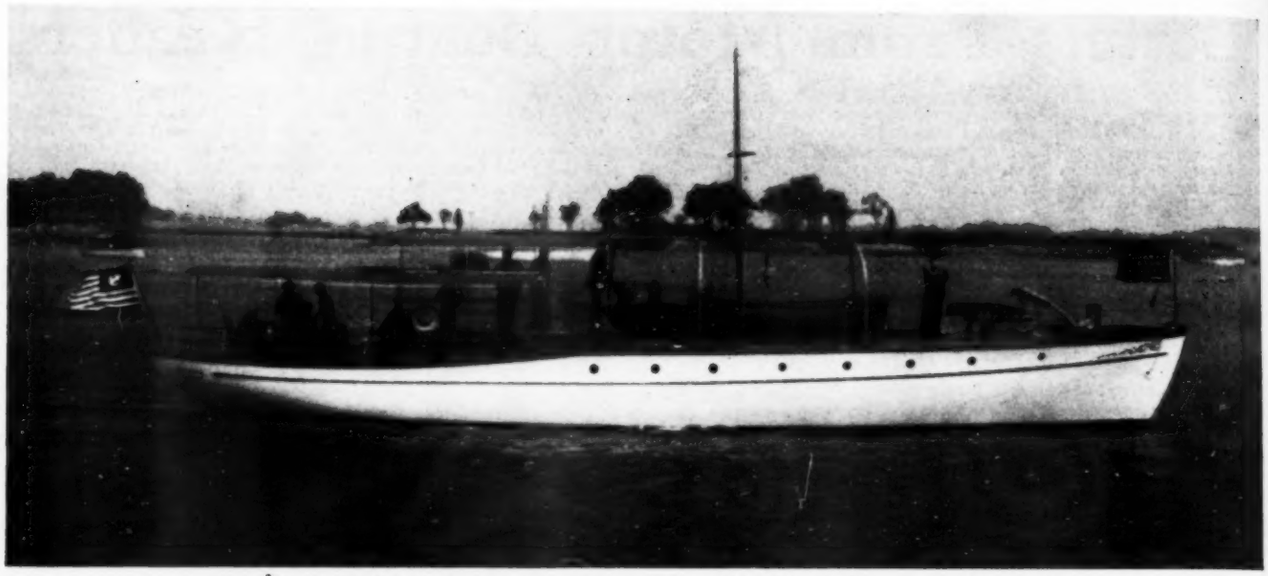


Diagram of a hydroplane showing that when traveling at high speed the center of gravity lies forward of the point where it enters the water.



Zenya is of the raised deck type and is the property of Mr. John S. Spencer, of New York.

Zenya--A 65-Foot Cruiser.

ONE of the latest yachts brought forth by Whittelsey & Whittelsey, of New York, is Zenya, photographs of which are shown herewith. This vessel is of the regular Whittelsey raised deck type similar to such boats as Itasca, Dolph, Satanita, Caroline and Cynthia II, and was built by the Greenwich Yacht Yard, of Greenwich, Conn. She was delivered to her owner, Mr. John S. Spencer, of New York, former owner of Valeda, in May of last year. The craft, both in workmanship and design, is one of the best types of the modern cruiser and is 65 feet over all, with a beam of 13 feet 8 inches and a draft of 3 feet 10 inches. She has ample freeboard, 6 feet 9 inches at the bow, 5 feet 4 inches amidships and 4 feet 4 inches at the stern.

The vessel is fitted with a 50 h.p. Standard motor which actually develops about 62 h.p. and drives her at a speed of 13½ miles per hour. She is heavily constructed throughout, having a white oak keel, 7 inches by 8 inches, interior longitudinals, 3½ x 3½, planking of long leaf yellow pine of 1½ to 1⅜ inch and steam bent white oak frames, 1¾ x 3¼, tapered at the head. All of the exterior joiner work is of solid African mahogany and is very well finished. The decks are of white pine, varnished.

The interior arrangement consists of a main saloon finished in solid mahogany, located amidships and entered by the main companionway on the starboard side. This main saloon has a handsome mahogany buffet, built in on the port side with leaded glass doors. Wide extension transoms are located upon either side of the saloon, above which are lockers and alcoves, fitted with gun and fishing tackle racks. All of the upholstery, rugs and cushions are finished in golden brown. Upon the port side, in the after part of the main saloon, is a writing desk above which are bookcases; a wardrobe opens above the forward end of the extension transom on the starboard side.

Just aft of the main saloon and opening from a passageway, connected by a sliding door, is the guest's state-room on the starboard side, finished in solid African mahogany and white enamel. This state-room has a wide double berth fitted with regular springs and mattress and has a bureau and a wardrobe with a glass door, both of which are built of mahogany.

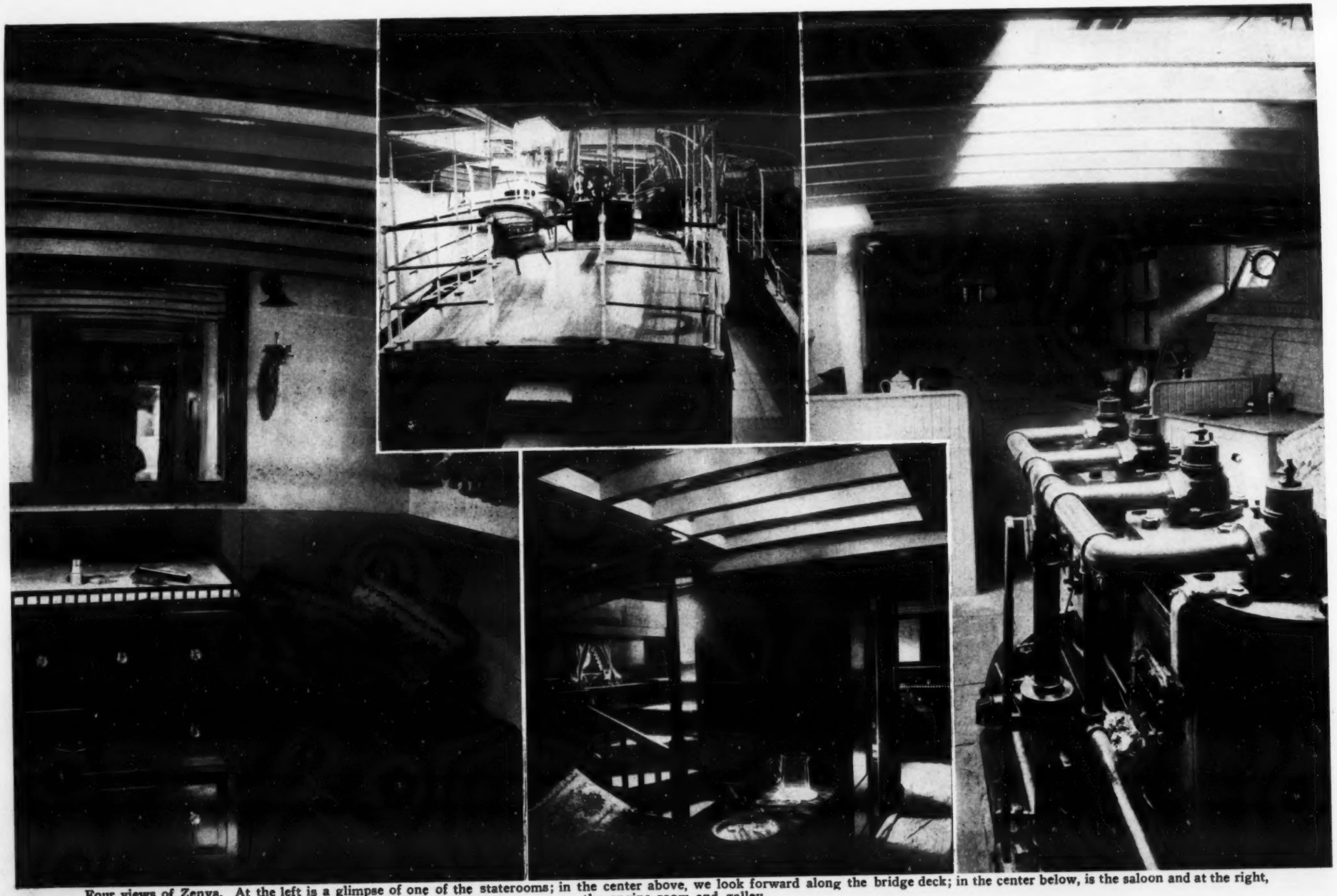
The owner's state-room is located at the end of the passage from the main saloon and is fitted with a double berth on one side and a double transom on the other, with lockers underneath and a large bureau between. The finish of the joiner work in this room is of white enamel and African mahogany. A large wardrobe, over 4 feet deep, opens upon the port side just forward of the transom.

The engine room is located just forward of the main saloon opening through a door in the bulkhead on the port side and is large and well ventilated through a hatch opening to the deck. There is plenty of room on all sides of the motor to properly handle the machine. In the forward part is located the crew's quarters with two pipe berths on either side. A work bench is built upon the starboard side between the berths and the galley, which is just forward of the engine room.

The galley, in the extreme forward part of the vessel, is fitted with a large, built-in ice-box, capable of carrying 500 pounds of ice, located in the center with lockers upon either side. A Shipmate four-hole range is located on the port side of the galley and by the side of this are dish racks and a dresser. Opposite the stove, on the starboard side of the vessel, is another series of dish racks and a sink. The finish of the engine room, crew's quarters and galley is in V-grooved North Carolina pine, painted. The gasoline tank has a capacity of 300 gallons and is located in the extreme after end of the vessel. Just forward of this and placed between two lockers of good size, which open from the owner's state-room, is a fresh water tank. A large toilet room is located on the port side of the vessel and opens from the passage connecting the main saloon with the owner's quarters. The crew's toilet is situated upon the starboard side and opens from the after part of the engine room.

The wheel and engine control are located upon the raised part of the deck, over the main saloon, just aft of a small signal mast, which is stepped nearly amidships. The bridge deck and after deck are both covered with awnings, supported by pipe stanchions and both are roomy enough to accommodate a number of wicker chairs. Each of these decks is nearly 14 feet long and inasmuch as nearly all of the raised deck space forward of the wheel is also available, this forms one of the pleasantest features of the boat. Two 12-foot tenders are swung upon davits just forward of the wheel. The entire boat gives a sense of comfort, with plenty of room and a feeling of security in heavy weather.

The engine room looking aft.



Four views of Zenya. At the left is a glimpse of one of the staterooms; in the center above, we look forward along the bridge deck; in the center below, is the saloon and at the right, the engine room and galley.

The Prize Contest in Questions and Answers.

WE would say a word about questions. Don't think you are displaying ignorance by suggesting them. The idea is that the questions will bring out interesting and instructive discussion, not that the askers of questions seek enlightenment. Even if you don't need to be told anything on some particular subject, if you think that a question bearing on it will produce a good lot of helpful discussion—for the other fellow—suggest the question. Yes, and you might be able to supply the best answer to it.

The answers published this month are to the set of questions given in the January issue. Answers to the questions given below will be printed in the May issue. Prizes for each set of questions will be awarded as soon as possible after the final date for receiving answers to them, and announcement of awards will be made by mail and published later on these pages.

READ the general conditions again: We will give prizes to those who send in the best answers to the questions printed herein each month, and in order that the contest may be helpful to the greatest possible extent, we will give prizes for the best and most practical questions submitted for the next following competition. There will be three questions in the contest each month, and therefore three prizes for the answers.

THE QUESTIONS FOR THE MAY CONTEST ARE THESE:

Give instructions and working drawings for the construction of a home made sextant.

Suggested by L. Kromholz, New York City.

What difficulties are met with in ventilating the cabin of a small cruiser and what is the best method of overcoming them?

Suggested by Wm. H. Harrington, Hartford, Conn.

What is the most suitable tender for a 30-foot cruiser and best method of disposing of it when on a cruise?

Suggested by Allen Goold, Portland, Me.

Answers to these questions, addressed to the Editor of MOTOR BOATING, 1789 Broadway, New York, must be:

(*a*) In our hands on or before March 28th, (*b*) not over 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.)

Questions for the next contest should reach us on or before the 28th of March.

THE PRIZES ARE:

For each of the best answers to the questions above, any article advertised in MOTOR BOATING, of which the price does not exceed $25, or a credit of $25 on any article advertised in MOTOR BOATING, which sells for more than that amount.

(*There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.*)

For each of the questions selected for use in the next contest, any article advertised in MOTOR BOATING, of which the price does not exceed $5, or a credit of $5 on any article advertised in MOTOR BOATING, which sells for more than that amount.

For all non-prize-winning answers published we will pay space rates.

To all who send in answers, prize winners excepted, we will give a copy of Goldie's "From Novice to Pilot," a practical book by a practical man on navigation and the operation of a motor boat.

When you send in your answer state what you will take if you win the prize.

How to Make a Chart Case.

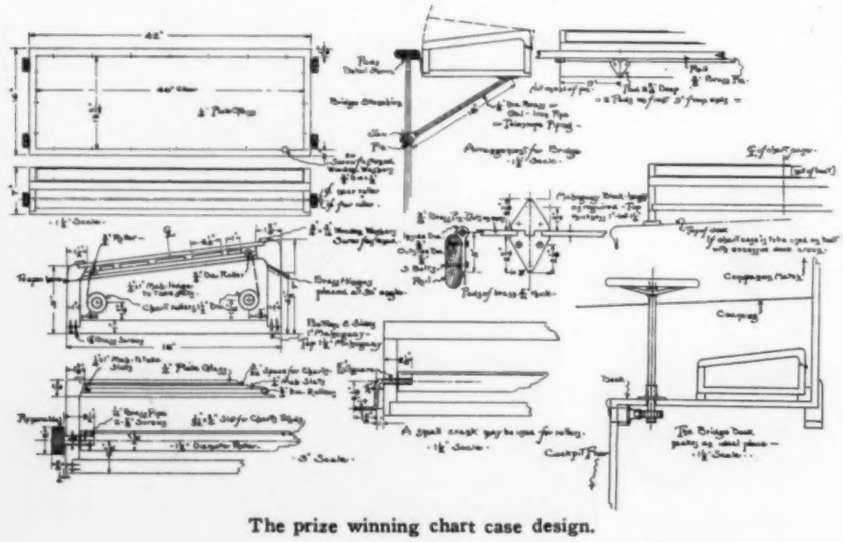
Answers to the First Question in the January Issue.

The Prize Winning Answer.

HOME-MADE would necessarily mean easy and quick to build. The chart case described herewith can be completed in about two weeks of evenings, depending upon with what speed the builder works, and practically all the tools needed are hammer, saw, plane, chisel and screw-driver.

A variation in the size would not materially affect the general construction. The kind of wood used can be teak, mahogany or oak, the first two mentioned being preferred to oak for their lasting qualities and attractive appearance. Brass screws countersunk and wood plugged excepting for the wooden washers should be used. The bolts and hinges should also be of brass.

By using the ¾ inch diameter rollers near top of case fully 7 inches have been saved in the over all width and yet allowing as much actual reading surface of chart as if the large rollers were placed nearly level with top. The frame has a slope or pitch of 2 inches permitting the water to run off freely making a drier and much more readable outfit than the flat top chart case. There is no ridge or frame higher than the glass, leaving no place for the water to collect and leak below. A strip of rubber about 1 inch x ⅛ inch would aid in making an absolutely tight joint but is not absolutely necessary. The frame is very effective and really simple in construction although it does not appear so in the drawing.



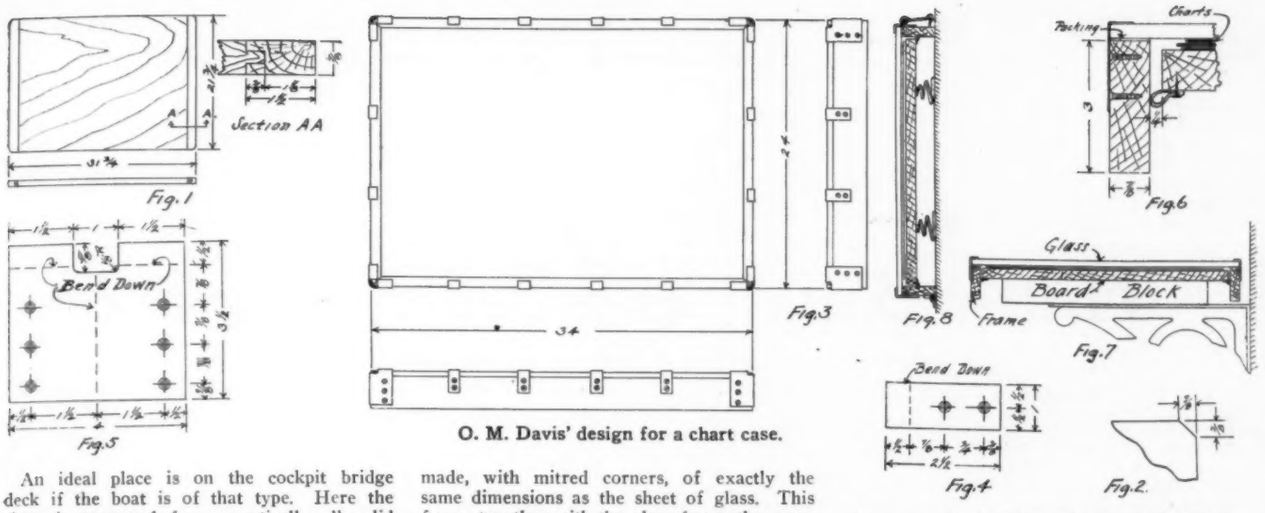
The prize winning chart case design.

Mahogany slats are used to hold chart flush against glass. The large rollers have a ¾ inch x 1/32 inch slot cut lengthwise to receive the ends of chart, so they may be worked either way without danger of coming loose. A small crank may be used in place of the wooden wheel as shown.

Brass (bronze—white metal—Monel metal) should be used for the necessary pads and pins which can be made up for a small outlay. Use well seasoned wood—make all joints tight—allow no discrepancy in the joints, thinking that they will swell shut and finish with 3 coats of spar varnish after planing and sandpapering smooth. The use of white lead in the seams is practicable and should be done carefully, as to show no smear on the outside.

On the cruiser which can boast of a bridge and rail a satisfactory way of attaching case is shown in drawing. By the use of telescoping rod and pipe the ease can be let down against the stanchions and made fast, or removed altogether should occasion require.

If used off center, on a boat with excessive crown to the deck, use small blocks securely fastened by bolts through roof and case—but of course it would be hard to make it stay there in any kind of a blow.



O. M. Davis' design for a chart case.

An ideal place is on the cockpit bridge deck if the boat is of that type. Here the chart is protected from practically all solid water or spray which may come aboard, and is not in the way of being fouled by lines, boat hooks or anything else, as in the cabin top arrangement last mentioned.

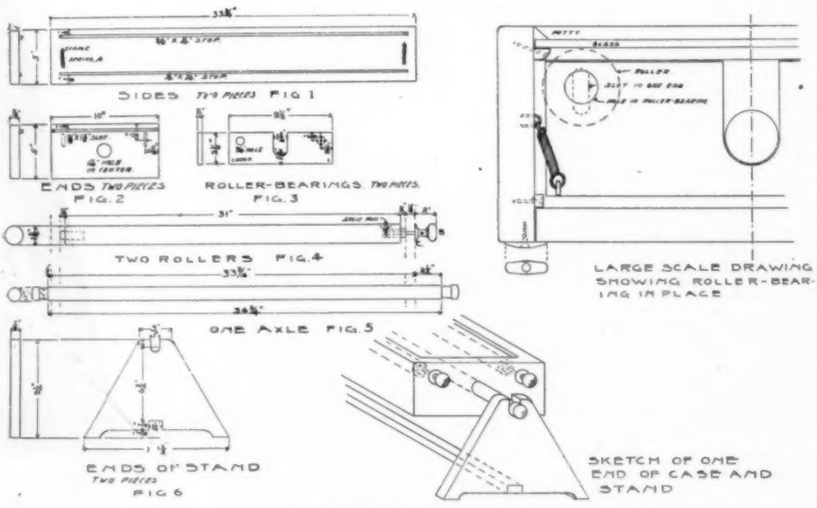
The chart made clear by a light through a port in the after cabin bulkhead would permit the man at the wheel to see the course he is steering at any time.

L. KROMHOLZ, New York City.

made, with mitred corners, of exactly the same dimensions as the sheet of glass. This frame together with the glass forms the cover for the board on which the charts are laid. The glass is held to the wood frame and the corners of the frame are strengthened and protected by some sheet brass pieces, details of which are shown in Figs. 4 and 5. The brass pieces are held on by ¾ inch brass screws. Between the glass and the wood frame there should be a strip of felt, rubber, or some such material so as to make a tight joint.

shown set horizontally, the board being set on 2 inch x 1 inch x 18 inch blocks which rest on iron brackets. Fig. 8 shows the case fastened to the wall by means of hinges and a hook. In this case the board is held out against the glass by means of springs (pieces of upholsterer's springs will do). Should a portable case be desired the construction as shown in Fig. 8 can be used; the wall being replaced by a board.

O. M. DAVIS, Evanston, Ill.


SIDES TWO PIECES FIG 1
ENDS TWO PIECES FIG. 2
ROLLER-BEARINGS TWO PIECES FIG. 3
TWO ROLLERS FIG. 4
ONE AXLE FIG. 5
ENDS OF STAND TWO PIECES FIG. 6
LARGE SCALE DRAWING SHOWING ROLLER-BEARING IN PLACE
SKETCH OF ONE END OF CASE AND STAND

The chart case design of H. S. Kimball.

After the Torpedo Boat Style.

THE chart case, as I shall describe it, consists of a board on which the chart or a pile of charts is placed and a glass and wood cap—which is set over the board to protect the charts from the weather. The board, Fig. 1, is simply a plain drawing board. For anyone desiring to make a board the detail drawing will be sufficient guide. Any wood will do but first-class white pine is best. The board should be slightly larger in size than the charts for which the case is being built; ⅞ inch all around for instance. And right here let me say that the dimensions shown on the accompanying drawings are for a case for charts 20 inches by 30 inches. These dimensions are taken not because it is the size of any lot of charts but because they are even figures which makes it easy for you to alter the dimensions on the drawings to suit the particular charts you have.

After securing the board the next thing is to get a suitable piece of glass. This would best be a piece of good plate glass cut square and 2¼ inches larger each way than the board. To make the best job the corners should be clipped as shown in Fig. 2, and the edges rubbed smooth. A frame, Fig. 3, is then

To prevent water from getting up under the cover and so onto the charts a bit of ordinary storm weather strip can be run around the board or a piece of felt or, as I have shown, a bit of rubber tubing can be tacked to the back of the board.

The case is now complete in itself but we must set it up. In Fig. 7 the chart case is

A Reversible Case.

THE advantages of this case are that by setting the movable bottom up into the case, rain flowing down the sides cannot run in.

The chart may be reversed without removing from the case. For instance, if sailing north, the east shore is to starboard, the west to port. Change the course to south and the east shore is really to port. Lift the case from the standards and turn end for end and the shores are in their correct direction from the boat.

The case may be set vertically, horizontally or at any angle between.

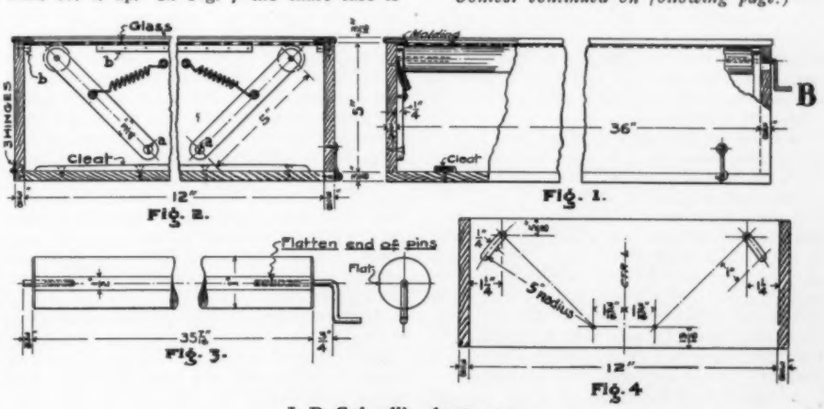
The rollers with chart attached may be removed intact without taking the case apart or even off the stand.

Charts are about 30 x 42 with north at the top. Those with the longest distance vertically can be contained in a 32 inch wide box, hence 32 inches as the long dimension. Charts with the largest distance easterly and westerly are put in with east instead of north at top as the more general travel is easterly or westerly, so this makes the relation of the shores to the boat parallel to the keel.

To make the case use ⅞ inch cypress for the case proper and the stand. It's cheap, easy to work and may be stained or varnished or both.

First cut sides (Fig. 1) and ends (Fig. 2). On inside of both near top glue (or bed in

(*Chart case descriptions continued on page 50. Contest continued on following page.*)



J. P. Colwell's chart case.

A Celluloid Chart Case.

THE average chart case when built of wood and glass has one great drawback, it's clumsy, and when it comes to stowing, one has to be very careful that the glass is not liable to breakage.

The ideal case must be light, not easily broken, easily stowed, and not occupy valuable space—generally at a premium on the average cruising boat of 35 feet.

The case satisfying all these requirements is made of celluloid—it hasn't blown up yet or caught fire although hot pipe ashes have frequently fallen on it. The chart inside is easily read and water has no effect on it. It keeps the celluloid clean.

Two sheets of celluloid were cut 26 x 38 inches in order to give an inside measurement of 24 x 36 inches. This proved ample in area for local charts, larger ones were carefully trimmed down and in a few cases were divided with a sharp knife to avoid ragged edges—the two parts being joined with stout muslin.

The transparent covers were fitted with a Pantasote binding about 2 inches wide and then machine sewed in two parallel lines on three sides, the fourth side was bound and then fitted with 4 snap catches evenly spaced.

When it came to stowing—the whole outfit was slipped under a transom cushion, although provision was made for slinging from the cabin roof.

C. PETERSON, Brooklyn, N. Y.

Hulls, Ballast and Seaworthiness.

Answers to Second Question in January Issue.

The Prize Winning Answer

IN dealing with this subject it will be best at the outset to determine the fundamental qualities which influence the stability and seaworthiness of a boat. To do this we must have a clear understanding of what is meant by metacentric height, for on this the whole question rests.

Few yachtsmen have any conception of metacentric height and think it some mysterious quantity known only to the designer. While the actual determination of this quantity is more or less difficult, the principle is very simple and once mastered any yachtsman will have a good idea of the behavior of a boat in a seaway.

We can define this metacentric height as the distance from the center of gravity to the metacenter. This point called the metacenter is determined solely by the vessel's form and displacement. If we consider the C. G. (See Note) to remain fixed it can be shown that the M. H. (See Note) increases as the square of the beam and inversely as the displacement. Lowering the C. G. will obviously increase the M.H. and raising the C.G. will decrease it.

Now it is known that the greater the metacentric height the more stable the boat will be. However excessive stability will make a boat very stiff and cause it to have short periods of rolling. As this distance increases as the square of the beam we see that a wide hull is very stiff and has short periods of rolling. If the hull is shallow as well as wide the displacement is decreased and the condition becomes even worse. If she should have a beam sea she will roll through small angles in a short jerky fashion to the discomfort of all on board.

If now on the other hand we have a narrow hull of the same displacement we will have a much smaller M.H. and the boat will roll slowly and easily. The large Atlantic liners which have a small beam for their length have a very small M.H. and roll slowly and are very comfortable boats compared to other boats in like conditions. As the M.H. decreases with increase in displacement, deepening the boat increases the displacement and lessens the M.H.

Let us next consider the subject of weights and ballast. If ballast is placed low down in the hull we lower the C.G. which we remember increases the M.H. and tends to make the boat stiffer and uncomfortable. Most Motor Boat owners are not aware of this fact and generally want to place their weights low which in the ordinary hull is generally very poor practice.

If however the weights added are distributed, some high up and some low down, an ideal sea boat will result. Very often placing ballast well out at the sides of a stiff boat will make for a much easier boat. This is illustrated by the see-saw which rocks slower as the weights move further out. Many times a fairly wide boat can be made much easier in this way. The warship is an excellent illustration. Here we have a ship of large beam that would be very stiff, but because of the heavy guns and armor placed well up and outboard, she is very easy and comfortable.

Adding ballast has little effect on a boat's pitching if kept away from the ends.

M.H. is the direct measure of stability, and reducing this more and more reduces the stability. If the M.H. became zero, the boat would not return after a roll, if it became negative the boat would capsize.

We thus see too much stability makes a boat very stiff and uncomfortable, and too little puts her in danger of capsizing. Something between these two extremes will give us the best boat.

A little study of the foregoing will show that a hull of moderate beam, rather deep, and with ballast well distributed, bearing in mind to keep a good proportion of it high up and outboard, will give the most seaworthy power cruiser. On the other hand a wide, shallow hull will produce a very stiff and uncomfortable sea boat.

Note:—M.H. = metacentric height.
C.G. = center of gravity.

L. B. CHAPMAN, Boston, Mass.

A Rough Weather Experience.

YES, without a doubt, it does. In order to build a shallow draft boat it is necessary to have nearly a flat bottom. This is no doubt an advantage in smooth water as it will require less power to drive it through the water; but the moment you run into a sea-way she will begin to pound and every plunge is straining every part of the hull and if she is not an exceptionally well built boat she will soon start leaking and you will have no end of trouble before she is tight again. Often times a boat can be strained in this way so her ribs and planking become loose and there is nothing left to do but pull her apart and rebuild her as she is so "wobbly" it is impossible to keep caulking in the seams.

A deep, ballasted hull, while a little bit slower, and probably requires a little more horse power, will cut her way through a nasty sea with half the motion and no way near the strain on herself, and if the bows are flared a little she will throw the spray off and not wet herself half so much as if they are straight up and down.

The best demonstration I ever saw of a deep ballasted V shaped hull was one winter while I was trading between Boston and Newport News. The ship I was in was a big flat bottomed collier and one afternoon while rounding Cape Cod in a north easter we were wallowing in it like a log and every lurch would throw you off your feet unless you held fast and smother us in spray, and I may add we were leaking so badly that the pumps were working overtime, while to windward of us were a fleet of fishermen bound in and making the best of weather of it and hardly wetting their decks. This was evidence enough for any one especially when our old hooker was making such bad weather and at least three times as big as the fishermen who only carried single reefs and were not endangering themselves at all.

Another point in favor of the sea worthiness of a deep ballasted hull. Look at the pilot boats. These boats are at sea in all kinds of weather, riding out gale after gale and how often do we read of any accident to them.

In conclusion I will state to all who contemplate cruising where they are liable to meet with heavy weather, to use a deep ballasted hull.

E. A. CRAWFORD, Newark, N. J.

A Deep Hull Has Many Advantages.

THE crankiness of the shallow draft, unballasted boat is plainly evident in a quartering or head sea. Owing to the large proportion of reserve buoyancy to displacement it has a decided tendency to pound. With its liberal breadth and bulkiness it bucks and climbs a wave and slides into the next hollow, recovering in a sharp, jerky motion altogether too quickly for the comfort of those on board.

Difficulty is experienced in keeping the beamy boat on a straight course—it requires a greater rudder area; proportionally than the other type—consequently stronger and more expensive steering gear.

The V section or sharp floored hull makes by far the more comfortable boat in rough water. Its good depth allows a strong and rigid foundation for the engine which can be installed low, keeping the center of gravity at or below the L. W. L. A deep engine foundation on a comparatively narrow or moderate beam boat practically eliminates vibration—a fault which is almost impossible to overcome in a wide flat boat. Although possessing hardly any initial stability—with the weights stowed low—along the keel and bilges—and with an auxiliary tank on deck used to offset the weight below; the narrow boat will roll more easily, recover its equilibrium more slowly and gradually with hardly and pound or strain on the hull.

Bilge keels of steel or wood for about ⅓ the hull's length, the center slightly aft of amidship, greatly increase the stability of the boat.

As regards the strength of the two types—a factor which practically means seaworthiness—it is generally admitted that the long, easy V shape hull is much stronger than the shoal, hard bilge, box-like, lighter draft boat, which all but pounds itself when rough water is encountered.

L. KROMHOLZ, New York City.

The Two Types Compared.

WE will take for comparison two boats, each of moderate beam, having raised decks forward and self-bailing cockpit drained by good, large scuppers, one to be built so as to have a considerable part of her hull in the water while the other to be built rather flat on the bottom and therefore of shoal draft.

In the first place the deep boat can have more freeboard without affecting her stability, making a dryer boat. Then, too, the structural strength of the deep boat is greater, as the deep construction acts as a truss, thus giving less chance of the planks working in a seaway and causing a leaky boat. In the shoal boat the sharp bend of the timbers at the bilges is a point of weakness while the deep boat has much easier bends.

It seems to me that the greatest danger to

which a small boat is subjected especially in the event of a sudden break-down of the motor, is that of capsizing, and it should not take much reasoning to convince a sane man that a deep boat with ballast properly arranged has a great deal better chance of remaining in her normal position than a boat which has so much more of her weight out of the water.

The deep boat has the further advantage of riding easier and pounding less when falling off a large wave, and the propeller being deeper is not so likely to leave the water and allow the motor to race, which is often the cause of a bad breakdown.

If we examine the fishing boats used along the coast which have to go out when she's "a howling" and stay there, the deep boat will be found to predominate, proving that actual experience has shown that the boat in the water stands up best under extreme conditions.

If we take the other extreme, the hydroplane draws about the least water of any boat existing and this type has proven itself absolutely useless in anything but smooth water.

The shoal draft boat is simply a happy medium between the deep boat and the hydroplane and is therefore a fairly good sea boat besides being convenient for cruising when shoal water is liable to be met with, but where seaworthiness is the first consideration the deep ballasted boat has no rival.

F. H. MALONEY, New Haven, Conn.

An Experiment With Both Types.

THE question, "does a deep, ballasted hull make a more seaworthy power cruiser than one with shallow draft and no ballast," is one which has been asked me several times, and from my experience aboard cruising boats I should say that a deep ballasted hull with good freeboard makes a more seaworthy boat, because having the hull well ballasted prevents her from rolling and riding up on the breakers and being carried back, as you well understand that the heavy breakers mean weight and resistance, and if the hull is well ballasted it will resist the weight and resistance due to the breakers and throw the breakers off.

I once had the pleasure of testing such a question, as stated above, and it was as follows: We had two boats of exactly the same design, shape and power, and we lashed them side by side. In one we placed sufficient ballast for a heavy sea. We then started the two boats going. We were in an inlet or small protected bay connected to Long Island Sound, and we headed the two boats for the outlet to the Sound where there were some extremely large breakers. As we approached the breakers we cut the lashing holding the two boats and the boats parted, the one having the heavy ballast rode the breakers fine and left the other boat having no ballast way behind. This I consider a good proof as to the deep, ballasted hull making the best cruiser, and a good cruiser must have plenty of freeboard.

WM. C. DAVIDS, Rutherford, N. J.

Shallow Boat Slow in a Seaway.

FOR an all round cruiser, in the exact sense of the words, the deep ballasted type is by far the most practical boat. To show why I think this statement is true, it will be necessary to relate a part of my experience with a cruiser of the shallow-draft design without any ballast, in a storm off the coast of Cape Cod, where, as every seaman knows, the dangers of the sea are worse than at almost any other place on the New England coast.

Before rounding Provincetown we had been making an average speed of ten knots, but running into a gale which had sprung up very suddenly we began to lose speed, until we were making but six or seven knots. Now the immediate cause of our retarded progress, was on account of the propeller coming out of the water, as every wave lifted her stern as if it were a leaf. Of course the boat slowed down until coasting to the bottom of the wave the wheel struck solid water again thus sending her along a little farther. This was a very unpleasant condition of affairs and to add to our discomfort the boat rolled from one side to the other, making it impossible to keep seated.

The constant racing of the engine and rolling of the boat began to tell on the weaker parts. We expected to feel something give way any minute and not being within fifty miles of a harbor, things took on a very unpleasant aspect. To still further impede our progress the engine got very hot, and using up more gasoline than we had expected finally stopped. The tank was filled with difficulty and after an unpleasant half day we reached the harbor of Orleans which sheltered us for the time.

The boat was very badly damaged. Seams were opened in places and the engine had to be readjusted as a result of the constant strain upon it. Needless to say we profited by our experience, so that now instead of a shallow, unballasted hull, a deep ballasted cruiser takes its place.

While a shallow type of boat may be all right for waters around Boston harbor, as it doesn't throw the water so much, at the same time it is better for general use to have a deep, well ballasted hull even if she does throw some water.

My boat now is slightly over thirty feet long, deep and evenly ballasted with small stone and a firmer, safer boat one could not wish. She rides on the very roughest water without rolling and pitching. She throws some water but that goes off to one side or the other of the lengthy cabin, and I can enjoy solid comfort where formerly with almost the same boat there was no pleasure in cruising in rough weather.

In conclusion I will say: "Experience is the very best teacher," is just as true in the choice of a hull as it is in any other respect.

H. ALVIN GOULD, Cambridge, Mass.

Which Way Should Twin Screws Turn?

Answers to Third Question in January Issue.

The Prize Winning Answer.

AT first glance it seems like a case of six of one and a half dozen of the other. Granted that the direction of the top of the screw "in" or "out" is the determining point, as to the effectiveness of the screw turning in or out, the latter direction seems to have a slight advantage over the former.

Considering that the water on the lower half of the screws offers a better "grip" (roughly 50% if the whole half of the screw is considered or about 30% if only the outer ⅓ of the length of the blade is considered effective) to the screw than does the upper half, due to the difference in depth and that that portion of the wheel adjacent to the hull is slightly less effective than the side opposite owing to the disturbance of the water caused by the motion of the hull (which disturbance decreases with the distance from the hull) one might reasonably conclude that a screw turning "out" would be slightly more effective than one turning "in" on account of the load per blade being gradually picked up as the blade descends, while with an "in" turning screw, the peak of the load per blade so to speak is picked up suddenly and gradually drops to its minimum value at the top of the screw.

On the other hand the writer noted one case where a boat, with "out" turning screws picked up a piece of coal which jammed between the blade and the hull, sheered a coupling key and sprung the shaft to such an extent that it had to be removed and straightened.

The torque or rather reaction of the motor causes a greater load or pound on the foundation on the side opposite the direction in which the wheel turns. On the "out" turning motor this load is brought in closer to the keel, than with an "in" turning motor and so reduces its moment, in respect to the keel and consequent vibration.

FRED FESTUS, Chicago, Ill.

More Speed Turning Outboard.

MY answer to the question of twin-screws for the March issue is as follows: Modern practice seems to sanction the arranging of the motors so that each propeller turns away from the center at the top, although a number of boats have been fitted with inboard turning propellers and those turning in the same direction. In some cases where inboard turning screws were fitted, the speed was not as good as with outboard turning propellers, and where the inboard system has been used, it was generally because of a better arrangement of machinery in the engine room. In one case, a large steam yacht where the propellers were arranged to turn inboard, the contract speed could not be realized until they were turned in the opposite direction. Normand, the famous French torpedo-boat builder, in a number of cases has turned the propellers both the same way and has obtained excellent speed results. When this was done, however, one propeller was placed slightly ahead of the other, and the pitch of the following screw was greater than that of the leading one.

EDWARD J. WAGNER, Providence, R. I.

Wake Beneficial.

IN considering the question of which direction of rotation is the more desirable for the propellers of a twin screw motor boat, the first thing to consider is the frictional wake, that is, the motion of water entrained by the boat in the direction in which the boat is traveling. This motion is greatest of course nearest the surface and directly on the center line of the boat and decreases with the distance in a lateral and downward direction.

Now, this frictional wake, strange as it may seem at first glance, tends to assist the propeller in doing its work, as traveling in the same direction, it has the same effect on the boat's progress, relative to the still water, as there would be in the case of a man towing a canal boat and walking at the same time along the platform of a moving flat car.

Therefore, granting this, and granting that the propeller gets a better resistance to work on as the depth of the water increases, then, by having the screws turn outboard, we obtain a more uniform distribution of power than the reverse; because, while the blade on the outside encounters greater density, or strictly speaking, water that is less mobile as it descends, that on the inside balances it by encountering the moving water of the wake which increases in relative velocity as the surface is approached.

It would seem, therefore, that it is better practice to have the screws turn outboard than the reverse.

W. N. WASHBURN, Ft. Wayne, Ind.

Talks With Our Naval Architects.

William Gardner.

IN a large square tower above the twelfth floor of the Washington Building at Number One Broadway, and overlooking the Battery, New York Bay and the Hudson River, is a busy drafting room where have been designed many of the best known crafts in this country today. This is the workshop of William Gardner, a man who has been designing boats of all sizes, from a 30-foot sloop to a battleship, ever since he was 19 years of age.

Mr. Gardner was born in Oswego, N. Y., a famous shipping town of the Great Lakes, and entered Cornell at the age of 15 years. During examination week of his Senior year and entirely for his own amusement, he designed the sloop Ella, which secured the title to the championship of Lake Ontario and held it for a number of years. After receiving his degree from Cornell, Mr. Gardner went abroad, where he spent five years in the technical schools and various shipyards of England. He entered the Royal Naval College at Greenwich, England, employing much of his time in the study of the higher branches of mathematics, and applied his scientific knowledge in the designing of two warships, a battleship and a cruiser.

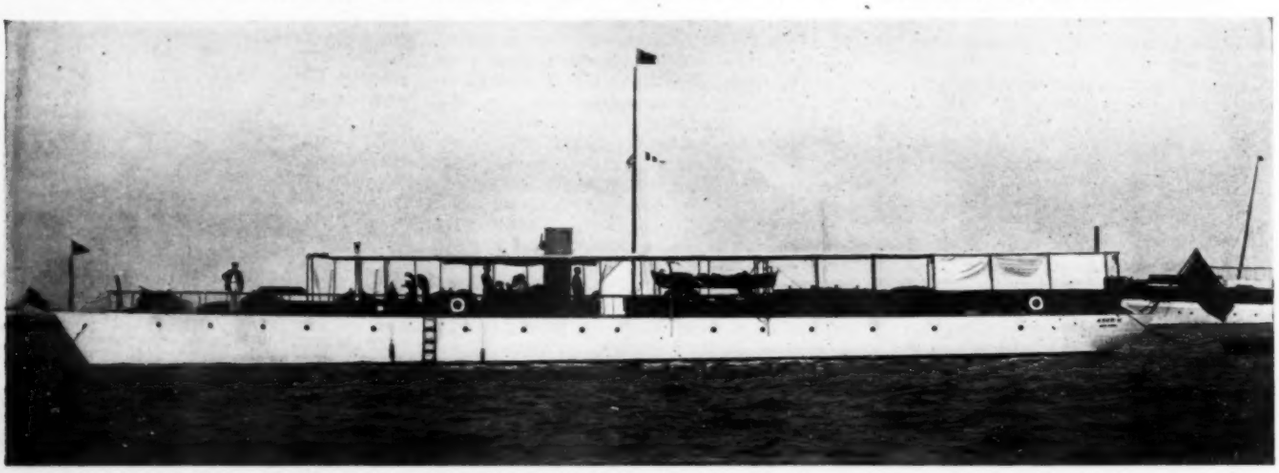
In 1888, Mr. Gardner returned to this country and opened an office in New York. His remarkable versatility can be recognized by recalling some of the boats he has designed, many of which have been champions in their class. One of his most famous sailing vessels is the International Cup Champion, Atlantic, which in 1905, in the race for the Kaiser Cup, made a world's record of 11 days, 16 hours and 22 minutes for crossing the Atlantic under sail. Other noted sailing vessels designed by Mr. Gardner are Irondequoit, winner of the Canada Cup; Vim, winner of the Roosevelt Cup; Atyr, and Caramba, winners in Europe of the Kasi Cup, which represents the championship of the Baltic. Princess, winner of the Sound championship, in the Q class; Windward, a class P boat and winner of the Manhassett Cup, as yet undefeated; and Gardenia, the champion of class M and winner of the Larchmont series, are well known yachts, designed by Mr. Gardner during the past year.

William Gardner, Naval Architect.

In the field of steam craft, Mr. Gardner has brought forth several noted yachts, such as Privateer, Colonia and Aztec, as well as a number of vessels for the mercantile service. Among the latter are the twin screw steamer Pennsylvania, of the Pennsylvania Railroad, Bridgeport, of the New Haven Line, Hampton, of the Old Dominion Line and the Elmira and her sister ferry of the Lackawanna Railroad.

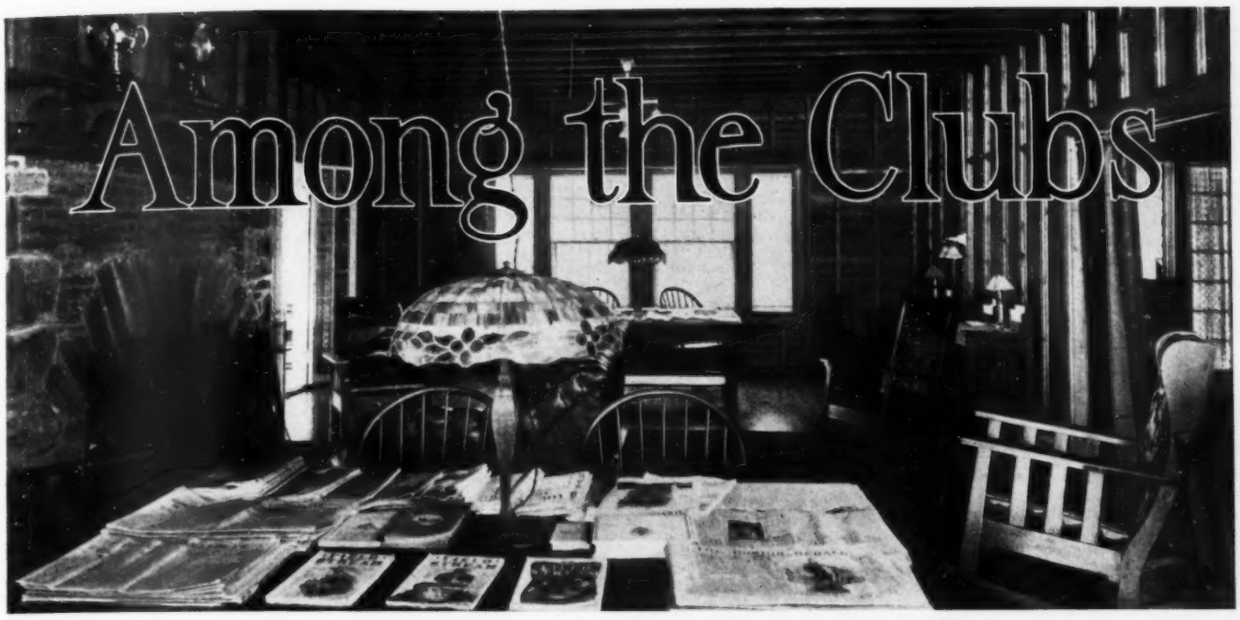
Mr. Gardner has confined his efforts in the power boat field to the construction of vessels of large size and high power, principally sea-going cruisers, although he has also designed a number of the smaller sound cruisers. He is firm in the belief that there are great possibilities in the power boat of larger size for cruising purposes. The economy of gasoline as a motive power rather than steam is of course self-evident, since there is no fuel consumption when the craft remains in port for a time, and yet she is ready at almost a moment's notice to get under way. The saving of space, a feature of so much value on shipboard, is an important factor in the usefulness of the gasoline engine, and it is largely for this reason that the steam yacht is gradually giving way to the high powered motor yacht even for extensive cruises.

Among Mr. Gardner's best known power boats of this type are Verdi, Weent, Yaqui, Lasata, Dodger and Azor II, the four last named having spent most of the time along the Atlantic Seabord from Halifax to Jamestown. Azor II, a photograph of which is shown below, is the largest power boat afloat at the present time, being 120 feet over all and 110 feet on the water line. She is equipped with two 300 h.p. engines, and while her owner, Mr. Mulford Martin, of the N. Y. Yacht Club, has not yet had the engines run at full speed, the vessel has shown herself capable of making better than 26 knots; she is a good sea boat as well and is one of the most comfortable cruisers afloat. She is now being fitted out for a southern cruise, which is to include Florida and Cuba, and is having a deck house added forward.



Azor II is one of the most comfortable cruisers afloat and can maintain a speed of nearly 30 miles per hour.

Among the Clubs



The comfortable lounging room of the Moosehead Lake Yacht Club in Maine.

Dexter Power Boat Club, Dexter, New York. At the recent annual meeting of this club officers for the ensuing year were elected as follows: Commodore, Frank G. Hall; Vice Commodore, George Hulse; Secretary, B. B. Fairchild; Treasurer, W. O. Smith; Fleet Captain, Louis Adsit; Trustee, Raymond Oaks. This club has been in existence for two years and has a membership at present of about 140 motor-boating enthusiasts. The original purpose of the club was to secure the lighting of the bay on Lake Ontario, and the placing of buoys for the protection of navigators.

Maryland Motor Boat Club, Baltimore, Md. The annual meeting of this club was held on January 19th and officers were elected as follows: President, W. P. Bigelow; Vice President, H. W. Steele; Commodore, Meyer Rosenbush; Vice Commodore, W. W. Varney; Rear Commodore, E. A. Schwartz; Secretary, Chas. C. Counselman; Treasurer, Edward A. Weiler; Fleet Captain, Albert H. Likes. The club has had a very successful year and is continuing its Saturday evening meetings for discussion at the club house throughout the winter. A change in the flag for next season has been decided upon.

Motor Boat Club of Buffalo, Buffalo, N. Y. At the annual banquet held recently the following officers were elected for 1910: Commodore, Harry T. Vars; Vice Commodore, Edward F. Dold; Rear Commodore, Frank H. Bliss; Treasurer, Edward N. Wilkes; Secretary, Phillip Gerst.

Clason Point Yacht Club, Bronx, New York City. This is a new club organized about a month ago with the following officers for the year: Commodore, H. H. Buber; Treasurer, Niels Toelberg; Secretary, J. P. Miller. The club's mooring and anchorage grounds are in the bay at Clason Point, where an excellent protection from storms and the wash of large Sound steamers is secured. The club already has the advantage of a marine railway near its anchorage and plans are already under way for the erection of an up-to-date club house.

Corinthian Yacht Club, Baltimore, Md. On January 21st the following officers were elected for the ensuing year: Commodore, J. H. Robinette; Vice Commodore, William H. Evans; Rear Commodore, J. E. Duker; Secretary and Treasurer, Wyatt W. Estep; Fleet Captain, W. B. W. Mann; Fleet Surgeon, Dr. A. B. Mansfield; Measurer, Graham Eckel. The annual report of the officers showed that the club has gained materially both in membership and in the number of boats in the fleet.

Illinois Valley Yacht Club, Peoria, Ill. This club has decided to undertake the entertainment of the regatta of the Western Power Boat Association to be held on August 27th and 28th, as well as that of the Mississippi Valley Association upon July 4th, 5th, and 6th. A great deal of interest is being manifested in both of these events, and the comparative nearness of Peoria to Chicago renders the success of the regattas assured. The Peoria club took charge of the Mississippi Valley regatta last year and the Association was so well pleased that it is probable that both of these regattas will become permanent affairs in the club calendar.

Columbia Yacht Club, Chicago, Ill. Although there appears to be at present more ice than water in Lake Michigan, this club has already decided upon June 18th as the date for the start of the annual Michigan City race. A committee is looking up the merits of the various rating rules and an interesting season is being anticipated. The following officers have been elected: Commodore, W. Y. Perry; Vice Commodore, H. D. Moreland; Rear Commodore, J. G. Giaver; Secretary, Irving M. Orr; Treasurer, Charles Coleman.

Albany Yacht Club, Albany, New York. One of the handsomest club houses on the Hudson River will soon be erected by this club at the foot of State street. The plans call for a three-story Colonial building to be constructed of tapestried brick with a gabled roof on the sides and ends. An innovation in the interior arrangement will be a workroom where members can make slight repairs by themselves, and thus assist in learning everything possible about the operation of their boats. The club was organized in 1873, and now has a membership of three hundred, with a motor boat fleet of one hundred and fifty. During the last few years the club has entertained every summer upwards of two thousand yachtsmen while on cruises to Lake Champlain and the Great Lakes, and the need was felt for larger quarters. The officers of the club are: Commodore, John E. Scopes; Vice Commodore, Matt M'Carty; Fleet Captain, T. J. Fitzpatrick, Jr.

Baltimore Yacht Club, Baltimore, Md. The following officers have been elected for 1910: Commodore, Dr. Isaac E. Emerson; Vice Commodore, Walter Ancker; Rear Commodore, Archer D. Foster; Fleet Captain, J. A. Dinning; Secretary and Treasurer, J. A. Davis; Measurer, Lawrence Jones. During the past five years, under the leadership of H. B. Gilpin, the former commodore, there has been an increase in the membership of the club from one hundred and fifty to nearly four hundred. Financially the organization is in better condition than it has ever been before and the progressive policy outlined by Commodore Emerson shows excellent prospects for the development of motor boating during the coming season.

New Jersey Yacht Club, Bayonne, N. J. At the annual meeting held recently at the club house at the foot of West 30th Street the following officers were elected: Commodore, F. N. Roehrich; Vice Commodore, William Baedecker; Rear Commodore, John Brock; Treasurer, Edward Bloom; Financial Secretary, Jules H. Dommerque; Recording Secretary, Geo. A. Hughes; Corresponding Secretary, James F. Owens; Measurer, John Bush; Fleet Captain, P. J. McDermot. A number of new boats will be added to the fleet during the coming season.

Duluth Boat Club, Duluth, Minn. Following the general trend of power boat racing, the members of this club have agreed to the proposition for adopting a standard size and design of craft for racing purposes during the coming summer. The design accepted is a boat just under the 26-foot limit, and each one will be equipped with an engine of the same make and power. Five members of the club have already ordered these boats and it is expected that the number will be largely increased before the season begins.

Savannah Motor Boat Club, Savannah, Ga. In order to compete with the other clubs in the coast cities of Florida, Georgia, and South Carolina, the members of this club have decided to raise between three and four thousand dollars for the purchase of a fast motor boat to be used in defending the title of the club. The following officers were elected at a recent meeting: Commodore, J. L. Hiers; Vice Commodore, P. J. Charlton; Secretary and Treasurer, H. V. Williams.

Pensacola Yacht and Motor Boat Club, Pensacola, Fla. Officers have been elected for the ensuing year as follows: Commodore, Thomas C. Watson; Vice Commodore, N. J. Lilliard; Rear Commodore, P. Lindenstruth; Captain, R. B. King; Lieutenant, C. H. Witherill; Secretary, R. B. Hodges; Treasurer, E. L. McFadden.

Cleveland Yacht Club, Cleveland, Ohio. The thirty-second annual meeting of the stockholders of this club was recently held and the following officers were elected for 1910: Commodore, Geo. H. Worthington; Vice Commodore, W. J. Bennet; Rear Commodore, C. H. Estinghausen; Secretary & Treasurer, V. A. Hines; Fleet Captain, C. P. DeMars. It was reported at the meeting that the 21-foot speed boat "Cleveland" would be turned over to the regatta committee to be raced under their direction in fresh water events of the coming season.

Palm Beach Races.

THE sixth annual regatta of the Palm Beach Power Boat Association, beginning on March 15th, is attracting widespread attention both on account of the large entry list and the valuable prizes offered. It is reported that 25 entries will be made from Florida alone, and a large number as well from many of the northern states. The three principal trophies are the Palm Beach grand prize of $2,500 in gold, the Palm Beach Cup, and the Association Cup; in addition to these there will be special prizes for each class.

Huntington Yacht Club, Huntington, L. I. The annual banquet of this club was held recently at the Cafe des Beaux Arts in Manhattan and plans for the coming season were discussed. It is quite probable that a one design class of auxiliaries of about twenty-five feet over all will be adopted by the club.

Hudson-Fulton Yacht Club, New York City. The first annual meeting of this club was held recently in its winter quarters at 2789 Broadway, and the following officers were elected: Commodore, Clarence G. Backus; Vice Commodore, Francis Holley; Rear Commodore, A. H. MacRae; Secretary, C. B. King; Treasurer, O. R. W. Hoefer; Assistant Treasurer, W. D. Chapman; Fleet Captain, C. F. Thiele; Fleet Surgeon, Dr. S. K. Foote. This organization was founded to commemorate the achievements of Henry Hudson and Robert Fulton, and its articles of incorporation were filed on the three hundredth anniversary of the arrival of Henry Hudson in the North River. The burgee of the club is a half moon in white on the Dutch colors.

Lakewood Yacht Club, Cleveland, Ohio. A committee has been appointed by this club to look after the necessary details of securing a new 18-foot boat for the express purpose of racing against eastern boats of its class on Massachusetts Bay some time during the coming July or August. The following officers were elected for the year: Commodore, Alexander Winton; Vice Commodore, E. W. Briggs; Rear Commodore, H. B. Anderson; Secretary, A. J. Phelps; Treasurer, W. H. Barnett.

Sea Isle City Yacht Club, Philadelphia, Pa. At a recent meeting of this club the plans were approved for the new club house which is to be erected within a short time on the recently purchased site above the old quarters. The building is to be three stories in height and the lot has a frontage of 102 feet on the inland waterway.

Pawtuxet Motor Boat Club, Pawtuxet, R. I. At the annual meeting of this club the following officers were elected: Commodore, A. A. Rhodes; Vice Commodore, Fred E. Johnson; Rear Commodore, R. E. Cranston; Secretary, H. W. Kimball; Treasurer, W. I. Cranston. By a unanimous vote of the club the secretary was instructed to apply for membership in the Narragansett Bay Yacht Racing Association.

Pavonia Yacht Club, Bayonne, N. J. This club, one of the oldest organizations of its kind in New Jersey, organized in 1869, held a regular meeting at the club house at the foot of Forty-first street on New York Bay, and elected the following officers: Commodore, Anthony Schneider; Vice Commodore, Claudis Harz; Rear Commodore, S. W. Decker, Financial Secretary, John Wilson; Recording Secretary, A. C. Castro; Treasurer, F. W. Becker; Fleet Surgeon, Dr. Hatch; Measurer, C. S. Barney.

Zanesville (O.) **Motor Boat Club.** The following officers have been elected for the ensuing year: Commodore, J. K. Arnold; Vice Commodore, H. M. Widney; Rear Commodore, Dr. R. B. Meek; Secretary, H. P. Long; Treasurer, J. S. Lauterbach.

Camden Motor Boat Club, Camden, N. J. It has been decided to hold a number of races on the river during the coming season, the first event of which will take place on Memorial Day. This race will be open to members of all motor boat clubs along the river and will be subject to the rules of the American Power Boat Association. The club house will be the official place for registering and measuring boats entered in the Philadelphia-Havana race to be held on May 21st, and all contestants will report at the house on May 19th for official measurement.

Minnesota Boat Club, St. Paul, Minn. The new house for this club is practically completed and it is hoped to have it ready in time to open by the first of March. The house is located on Raspberry Island, an ideal situation, and will cost when completed, $27,000. The Minnesota Boat Club is one of the oldest in the city of St. Paul, having been organized in 1868.

New Rochelle Yacht Club, New Rochelle, N. Y. At the recent annual meeting the following officers were elected for the present year: Commodore, M. W. Houck; Vice Commodore, E. C. Myrick; Rear Commodore, S. C. Hunter; Secretary, C. A. Marsland; Treasurer, C. E. Salter; Measurer, R. M. Haddock. The club membership now numbers 235 and it is expected that when the number reaches 250, none but yacht owners will be admitted.

Western Power Boat Association. A large delegation attended a meeting of this association held in Chicago recently, and a motion was passed empowering vice presidents to call special meetings in their localities, since some of the clubs are unable to attend meetings as held at present owing to the large territory covered by the Association. It was also decided to hold a meeting between the Association and the Mississippi Power Boat Association in order to promote racing in the west.

The Havana Race.

THIS race, held under the combined auspices of the Yachtsmen's Club, of Philadelphia, and the Havana Yacht Club, of Havana, Cuba, will start from the Race St. wharf, Philadelphia, May 21st, at 12:30 P. M. Six entries have already been received and there are indications of several more. An attractive pamphlet is being distributed by the Yachtsmen's Club, stating the conditions of the race and giving a map of the course.

A silver cup valued at $1,000 in addition to $1,000 in cash is offered to the first boat to finish, and second and third prizes consisting of cups and cash to the value of $500 and $250 respectively, are also offered, the latter in case six or more boats compete.

Fuel and supply stations will be established along the coast, although stores and water sufficient for thirty days for each man must be carried. It is expected that the race will occupy from five to six days and a crew of six men must be taken in each yacht.

This race is the first long distance event ever held from Philadelphia and a great deal of interest is being manifested. The people of Havana are making great preparations to entertain the visiting yachtsmen upon their arrival and plans are being made for a return race for which a cup will be offered by the Havana Yacht Club.

Motor Boat Shows of 1910.

Feb. 19 to 26: New York.—Motor boat show of the National Association of Engine and Boat Manufacturers. Held at Madison Square Garden and opens at noon on February 19th.

Feb. 24 to March 3: Toronto.—Toronto Motor Show held in St. Lawrence Arena. Communications should be addressed to E. M. Wilcox, Mgr., 123 Bay St., Toronto.

Feb. 28 to March 5: Detroit.—Detroit Motor Boat and Engine Show held at the Light Guard Armory. Communications should be addressed to A. B. Moulder, Mgr., Detroit, Mich.

March 21 to 30: Buffalo.—Third Annual Power Boat and Sportsmen's Show held in Convention Hall under management of Buffalo Launch Club. Communications should be addressed to Dai H. Lewis, 760 Main St., Buffalo.

March 26 to April 2: Chicago.—Chicago Show of Western Manufacturers (sanctioned by the National Association of Engine and Boat Manufacturers) held at First Regiment Armory, 16th St. and Michigan Ave., under management of Chester I. Campbell.

March 26 to April 2: Montreal.—Montreal Motor and Sportsmen's Show held in the Coliseum. All communications should be addressed to E. M. Wilcox, Mgr., 123 Bay St., Toronto, Ont.

April 23 to 29: Bangor, Me.—Eastern Maine automobile and motor boat show, held in the Auditorium.

June 13 to 16: Cincinnati.—National Gas and Gasoline Engine Trades Association exhibition held at the Sinton Hotel.

Racing Events For 1910.

March 15 to 18: Palm Beach, Florida.—Palm Beach Regatta held upon Lake Worth under the auspices of the Palm Beach Power Boat Association. The schedule follows:

Tuesday, March 15.—Speed Record Trial, average of 6 trials over the mile course, Palm Beach Cup; Speed Contest, Florida designed and constructed boats only, no time allowance, 9 miles, the Association Cups; Class A, all boats, A. P. B. A. handicap, 9 miles.

Wednesday, March 16.—Class B. For boats under 32 feet L. W. L. 4½ miles. Class C. For boats over 32 feet L. W. L. 4½ miles. Class BC. For all boats, 4½ miles. Class BC. For boats of all lengths, 18 miles.

Thursday, March 17.—Class D. For boats under 17 miles speed, 4½ miles. Class E. For boats over 17 miles speed, 4½ miles. Class DE. For all boats over 12 miles speed, 9 miles. Speed Economy Test.

Friday, March 18.—Endurance Contest for all boats over 20 miles speed, 103.5 miles. Palm Beach Grand Prize; Consolation Race, all boats over 12 miles speed, 4½ miles.

April 1 to 14: Monaco, France.—Seventh International Motor Boat Meet. Prizes will aggregate $24,000 in value.

May 21: Philadelphia, Pa.—Start of the Philadelphia-Havana race, covering a distance of approximately 1,300 miles and open to seaworthy boats of from 50 to 100 feet over all.

June 25: New York.—Start from the lower bay, of the New York-Bermuda race under the auspices of the Motor Boat Club of America.

July 2: Brooklyn.—Start of annual races held by the Brooklyn Yacht Club over the Cape May course.

July 4 to 6: Peoria, Ill.—Annual regatta of the Mississippi Valley Power Boat Association. Prizes aggregating more than $4,000 will be offered.

August 20: New York.—British International Races for the Harmsworth Trophy, over the Huntington Bay course, Long Island Sound.

August 25 to 27: Alexandria Bay, N. Y.—Probable dates for the Gold Challenge Cup Races held on the St. Lawrence by the American Power Boat Association.

August: Juneau, Alaska.—This race will probably start during the third week in August and will run over a course from Juneau, Alaska, to Seattle, a distance of over 1,000 miles.

August 27 and 28: Peoria, Ill.—Second annual regatta of the Western Power Boat Association.

New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man With a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motorboatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING, they will receive special attention.]

Fig. 1.—Electric Ship Telegraph.

Electric Ship Telegraph (Fig. 1).—The Richardson Engineering Company, Hartford, Conn. As its name implies, this device is an electrically operated telegraph or engine room signal and its installation does away with the necessity of chains and rods. The transmitter shown on the left, has on the face the same names as those on the mechanically operated device and is equipped with the same handle. When the handle is moved to the sector corresponding to the signal to be sent, this sector lights up and in the engine room the same sector is illuminated and a gong is rung. The standard equipment consists of a pedestal of polished brass on which is mounted, the transmitter and together with the engine room equipment sells for $95.

* * *

Fig. 2.—Roper Safety Coupling.

Roper Safety Coupling (Fig. 2).—C. F. Roper & Company, Hopedale, Mass. This coupling was designed to protect the propeller from injury in the event of its striking submerged rocks, logs, etc. An accident of this kind automatically uncouples the propeller from the motor, permitting the latter to run free. The vital feature of this coupling lies in its adjustment, which enables it to be set so that while able to carry the full power of the engine, it will cut off and free it before the propeller is injured. It is made in four sizes, for shafts of from ⅝ to 1½ inches in diameter and sells for from $6 to $8.

* * *

Fig. 3.—The Howard Miniature Lamp.

The Howard Miniature Lamp (Fig. 3).—The Howard Miniature Lamp Company, 327 Academy Street, Newark, N. J. The electric lamp and adapter here illustrated, has an advantage over many other similar devices, in two respects, namely: it may be easily adjusted to the focal point of the lamp and it may as easily be swung out of the way, so that the oil or gas lamps may be used at a moment's notice. Another feature of the device is that the supporting arm is equipped with a spring attachment which takes up the jar and prolongs the life of the lamp, which is a very desirable feature when Tungsten filaments are used. The price of the attachment, without bulb, is $1.75 and the bulbs are 60c. each.

* * *

Fig. 4.—Fish Tail Propeller.

Fishtail Propeller (Fig. 4).—Mechanical Devices Company, Inc., Watervliet, N. Y. The fishtail propeller in the accompanying illustration, it is claimed, solves the propeller problem of the high rate of speed of the gasoline engine. It was designed especially for motors making 600 revolutions a minute or over and has been put on the market only after much study and experiment and the makers guarantee that with its use, an increase in speed will be obtained over that obtained with the old style propeller. It is made in sizes ranging from 10 to 28 inches in diameter for use with motors of from 1 to 350 h.p. and sells for $5.40 to $46, according to size and finish.

* * *

Fig. 5.—Dirigo Electric Compass Light.

Dirigo Electric Compass Light (Fig. 5).—Eugene M. Sherman, Reade Street, Lexington, Mass. This lamp was designed to take the place of the binnacle and will be found very desirable for use on the smaller boats. It comprises a swinging and adjustable arm, to which is attached the receptacle for the lamp. The arm may be readily attached to the box or to the gimbal of the compass in the larger sizes and swings down inside when not in use. A 4 to 6 volt lamp of about 1 candlepower is used and so shaded as to cast the light directly on the dial. The lamp requires very little current and is designed to be used with a battery of dry cells. The price of the attachment plain or with green or frosted bulb is $1 and extra lamps are 40c. each.

The Gray Fog Bell (Fig. 6).—Gray-Hawley Mfg. Company, Detroit, Michigan. This bell is something entirely new in its line. It can be placed on deck or on the cabin top and no matter how rough the sea, the bell will not ring until the cord is pulled. The bell is rigidly supported by a center post to which the clapper is held by a system of springs. A deck plate is supplied with the bell and by simply loosening a lock nut, the bell and post may be removed. If so desired, the center post may be had separately in several sizes to fit any of the old style bells. The price of the outfit, including deck plate, is $2.50.

* * *

Fig. 6.—The Gray Fog Bell.

Electric Acetylene Burner (Fig. 7).—Electric Goods Mfg. Co., Canton, Mass. The perfex Burner, shown in the accompanying illustration, overcomes the difficulty of lighting acetylene lamps during heavy wind and rain. By pressing a push button located in any convenient part of the boat, this device electrically ignites headlights or side lights without the usual difficulty. The total height of the burner is exactly the same as the ordinary acetylene burner which keeps the light at the same focal point. Either dry cells or a storage battery may be used to supply the current. The price of the outfit, consisting of two burners, 20 feet rubber covered, flexible wire, one push button, tape and white lead is $6.

* * *

Fig. 7.—Electric Acetylene Burner.

Bay State Wrench Set (Fig. 8).—G. A. Cutter, Taunton, Mass. This new wrench set consists of a double ended ratchet wrench, strapped to seven strong, stamped steel sockets, strung on a square steel shank. One end of the wrench fits the shank, the other fits the sockets. The wrench also fits four sizes of nuts and with the sockets eleven different sizes of nuts and cap screws. One end of the shank has fitted to it a 1¼ inch ball which is easily removable and the other end of the shank has a ball stop and a spring ball for holding the socket in place. This device sells for $3. And extra sockets may be obtained at the rate of 5 for $1.

* * *

Fig. 8.—Bay State Wrench Set.

The Aaron Automatic Low Pressure Pump (Fig. 9).—J. F. Kennedy Company, 53 Devonshire Street, Boston, Mass. The device shown herewith was designed to be used in connection with the circulating system and requires no other source of power than the discharge from this system which is usually put to no further use. By passing through this pump the cooling water automatically creates a suction of sufficient force to gather up the bilge water and discharge it overboard. The pump is constructed of brass throughout and there are no gears or plungers and but few working parts used in its construction and these are made detachable with ample provision for cleaning and adjusting.

* * *

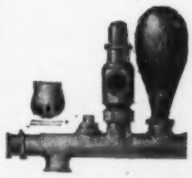


Fig. 9.—Aaron Automatic Low Pressure Pump.

Perfex Water-tight Coil (Fig. 10).—Electric Goods Mfg. Co., Canton, Mass. This coil, as its name implies, is absolutely water-tight, in fact its makers claim that it will work perfectly when submerged. The stand and covering are continuous and are of solid lead. The core is 4½ inches long of thoroughly annealed soft iron wire producing very quick demagnetization. The spool surrounding the core is wound with 14 layers of No. 14 wire, paper covered and paraffined to prevent internal short circuit between layers. Lead covered wires furnished with special connectors and soft rubber sleeves are passed through the head of the coil and carefully sweated to its casing. The price is $3.50.

Fig. 10.—Perfex Water-tight Coil.

Fig. 11.—Ol-Se-Co Liquid Soap.

Ol-Se-Co Liquid Soap (Fig. 11).—Saponol Chemical Co., 1916-38 Park Avenue, N. Y. This soap and its container, shown in the accompanying illustration, is a step in advance of the old method, in that it is much more sanitary. The device is particularly adapted for motor boat use as it is perfectly rigid and is ship-shape in appearance. The soap itself is worthy of the device that holds it and may be used for any purpose from a mouth wash to a shampoo. The bracket is made in several styles, either plain or with one or two tumbler holders above and sells for from $3 to $5. The soap sells for $2.50 a gallon but may be had in smaller quantities.

* * *

Gerome Perfection Universal Joint (Fig. 12).—T. F. Gerome, 130-132 West 18th Street, New York City. The Universal Joint herewith illustrated is made throughout of hardened steel and is made in all sizes and for any power. The parts are interchangeable and easily disconnected and may be adjusted for wear. It is noiseless in operation, runs very smoothly and has no dead points. The moving parts are few and simple, and the device is dust-proof.

Fig. 12.—Gerome Perfection Universal Joint.

* * *

Fits-All Adapter (Fig. 13).—The Dayton Electrical Mfg. Co., Dayton, Ohio. This is a simple device for adapting oil and acetylene lamps for use for adapting oil and The adapter fits over the standard burner as shown in the illustration, and may be applied or removed at a moment's notice. As it in no way interferes with the lamp, there are always two sources of light available. The price of the Fits-All Adapter is 75c. and the six candle-power Tungsten lamps are 75c. each.

Fig. 13.—Fits-All Adapter.

* * *

Kaufmann's Anchor (Fig. 14).—Charles Kaufmann, Oshkosh, Wis. This anchor was designed for use on small boats and launches and considering its size and weight, is very efficient. This efficiency is due to the shape which tends to imbed the anchor in the bottom as the strain on the rope increases. It is made in two sizes, the 12 pound size sells for 95c. and the 24 pound size for $1.90.

Fig. 14.—Kaufmann's Anchor.

* * *

Ideal Gasoline Storage Outfit (Fig. 15).—Janney, Steinmetz & Co., Philadelphia, Pa. For those motor boatmen who desire to store their own gasoline the device here illustrated will prove most convenient. The safest method of storing gasoline is below ground and with this equipment either a long distance or direct lift pump may be had so that the tank may be located either below the boat house floor or some distance away. The tanks are of welded, seamless steel, galvanized by the hot process and painted outside with two coats of anti-corrosion paint. The tanks are furnished in 55 and 110 gallon sizes. The former with direct lift pump sells for $25 and with long distance pump for $35. The latter with direct lift pump sells for $30 and with long distance pump for $40.

Fig. 15.—Ideal Gasoline Storage Outfit.

* * *

Non-Explosion Device.—Lovett-Chandler Co., Inc., 6 Beacon Street, Boston, Mass. This company has invented a device which is designed to prevent the possibility of an explosion due to the accumulation of gases. The device is a small ventilator, attached to a deck plate, with connections below for attaching a canvas pipe which extends to within a few inches of the floor, and which draws out any gasoline fumes or gases that might otherwise accumulate and be the cause of an explosion. The device also acts as a ventilator for the cabin.

* * *

Folding Trunk Boat (Fig. 16).—The Ripley Steel Boat Company, Grafton, Ill. This folding boat is particularly adapted for the use of hunters and fishermen, as it may be folded, as shown in the illustration, forming a trunk, which may be shipped as an ordinary trunk or stowed away on board a motor boat. It is made in two styles, the John Boat style, as shown in the accompanying illustration, and the double ended style, the prices for which are the same. It is made in two sections which are hinged together in the center and when in use it is held rigidly extended by means of hooks. Model 11 is 14 feet long, 42 inches wide and 15 inches deep, weighs about 200 pounds and sells for $28. The same model made of 26 gauge galvanized steel, weight about 140 pounds and sells for $23.

Fig. 16.—Folding Trunk Boat.

Universal Air Compressor (Fig. 17).—Harz & Company, 295 Lafayette Street, New York City. The Universal is an air compressor, driven by friction from the engine flywheel and was designed for pumping air into the tanks used on motor boats to supply whistles, etc. As shown in the illustration, this device is so mounted that it may be swung into contact with the flywheel by merely shifting it on its pivot. The cylinder has a bore of 1⅜ inches and a stroke of 2⅛ inches and the device complete weighs 11 pounds. Price with either straight or side bracket $20.

Fig. 17.—Universal Air Compressor.

* * *

Heinze "1 M" Magneto (Fig. 18).—Heinze Electric Company, Lowell, Mass. The makers list this magneto as a low-tension apparatus, but it is one of the type in which the low-tension current it generated in the armature winding and is transformed in a separate coil, the secondary current from which is distributed by distributor on the magneto. There are several original points in this construction. The round field magnets are ground into the pole pieces, so that there is no possible chance for magnetic leakage. It is stated that a spark ⅛ inch in length is uniformly produced at an armature speed of 50 r. p. m.

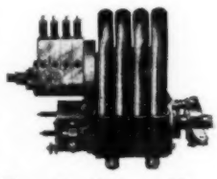


Fig. 18.—Heinze Magneto.

* * *

The Vulcan Auto Tool (Fig. 19).—J. H. Williams & Co., 150 Hamilton Avenue, Brooklyn, N. Y. This combination tool comprises a whole tool kit in one device and is a convenient addition to the motor boat tool locker. It is made of drop-forged steel, milled and ground to correct sizes of openings, and is tempered, polished and blued. In this one device are included: a hammer, lug wrench, cotter pin puller, gas tank wrench, wire insulation scraper, air tank wrench, spark plug wrench, alligator wrench, three screw-drivers and last but not least a bottle opener. The price is $1.

Fig. 19.—The Vulcan Auto Tool.

* * *

Klaxonet (Fig. 20).—Lovell-McConnell Mfg. Co., Newark, N. J. This, the youngest member of the Klaxon family, was designed for use on smaller boats and contains all the features and quality of the well-known Klaxon signal but it is somewhat smaller in size. The operation is the same as that of the larger models and the diaphragm is of the same chrome-vanadium steel. It is wound for six volts and operates satisfactorily on from four to six dry cells. It is attached even more readily than the Klaxon, as the bracket, being of soft brass, is easily bent to suit any coaming. The price is $20 complete.

Fig. 20.—Klaxonet.

* * *

Elastic Seam Composition.—H. B. Fred. Kuhls, 23rd Street and Third Ave., Brooklyn, New York. This seam composition is prepared for use in deck seams, skylights, floors, and in fact anywhere that a water-tight joint is required. Its elastic quality makes it particularly adapted for exposed decks, where the frequent changes of temperature cause the planks to contract or expand. The elastic seam composition is made in white, black, gray and yellow and, to order, in all other colors. This company also manufactures several other preparations, among them an elastic flat yacht white, an elastic gloss yacht white, and three kinds of copper paint for use on boat bottoms, etc.

* * *

The "Radium" Watch (Fig. 21).—Charles E. Miller, 97 Reade Street, New York City. This watch is the latest importation of the above supply house and is highly original in that it possesses a dial which is self-illuminating at night. It the daytime it has the appearance of an ordinary watch; but at each of the hour marks on the dial there is inserted a small buttom of "radium alloy" which becomes luminous in the dark. All that is necessary to enable one to tell time at night with this watch is familiarity with the position of the several hour marks on the dial. Price $15.

Fig. 21.—Radium Watch.

* * *

Eames Socket Wrenches (Fig. 22).—Eames Tool Company, Lynn, Mass. These wrenches are designed for use on nuts and bolt heads when they are located in inaccessible positions or at difficult angles. The handle is made of two steel drop forgings properly machined and joined together. In the cut herewith the handle is shown in its two extreme positions. The cross bar or T attachment is also of steel and can be slipped readily into its place in the main handle, but cannot slip out, of its own accord. There are twenty-two sockets, including one long spark plug socket, price $9 per set.

Fig. 22.—Eames Socket Wrenches.

Yard and Shop

The yard of C. Durm and Son, a favorite rendezvous for Baltimore yachtsmen.

THE above photograph shows one of the oldest ship yards in the City of Baltimore, standing upon the spot formerly occupied by the shops of Ross Winans, one of the first American builders of submarine craft. Winans Cove, a noted graveyard for vessels, takes its name from this man. Upon the right of the photograph may be seen the hulks of a score or more of vessels which have at one time or other been used in Baltimore's trade with the West Indies in the time of clipper ships. The only small floating dry dock in the city is located in these yards.

The Buffalo Gasolene Motor Company of Buffalo, New York have changed their selling agency in New York City into a branch office, in order to give closer attention and better service to the users of Buffalo engines in the Metropolitan district. This branch office is located at 1635 Terminal Building with Mr. W. S. McLeod in charge. The new territory for this branch will include the State of Connecticut beside the Metropolitan district, which takes in Long Island, the Hudson River and the New Jersey coast.

Alexander M. Orr, Jr. has been received into partnership by Henry J. Gielow, naval architect of 52 Broadway, New York, and the firm will hereafter be known as **Gielow & Orr.**

Morris M. Whitaker, although a member of the committee of the National Power Boat Commission whose report was published in the February issue of MOTOR BOATING, has asked us to state that he was unable to be present at the meeting, took no part in the proceedings and is not in favor of the report submitted by the committee.

The Lackawanna Manufacturing Company, of Newburgh, New York, have arranged to pay at the Motor Boat Show in New York, to each holder of their special check, a coin bearing on its face a raised engraving of the Lackawanna Valveless Motor. These coins will be good for $2.00 in gold on the purchase of any motor made by this company. Checks which may be exchanged for these coins may be procured direct from the Newburgh office by any persons applying for them.

Bruns, Kimball & Company, Inc., General Marine Agents and Yacht Brokers, have found it necessary to obtain larger New York show rooms and after March 1st, will be located at 134 Liberty Street, a few doors from their present location.

The Detroit Boat Company of Detroit, Michigan, have established a consultation department in connection with their factory and all motor boatmen are invited to bring to them for solution any troubles pertaining to motor boats and their operation.

Swasey, Raymond & Page, naval architects of Boston, have recently opened a business office at 505 Fifth Avenue, New York City, in charge of A. B. Raymond.

The Olds Gas Power Company have been appointed direct factory distributors of the Lackawanna Motors for the New England district and have opened salesrooms, offices and a machine shop at numbers 59-69 Beverly Street, Boston.

The Chicago Motor Boat Show, which is to be held from March 26th to April 2nd, under the management of Chester I. Campbell, who so successfully managed the Boston Show, gives every indication of being one of the most complete exhibitions of its kind ever held. All of the available space in the First Regiment Armory will be utilized and Manager Campbell gives assurance of a distinctive and novel scheme of decoration.

Allen W. Fulton & Company have been appointed general sales agents for the Anderson line of engines manufactured at Shelbyville, Ill. and will carry a complete line of the engines at their show rooms at 602 East Pratt Street, Baltimore.

M. M. Whitaker, naval architect, on February 1st, moved into larger offices in the Metropolitan Tower, New York City, where he has about two and one half times as much space as he had in his former offices in the same building.

The Strelinger Marine Engine Company, of Detroit, Michigan, has purchased the entire plant, stock and machinery of the **United Manufacturing Company,** of Detroit. This new acquisition gives the Strelinger Engine Company increased facilities and they will hereafter manufacture the two cycle "Little Giant" engine formerly made by the United Manufacturing Company, as well as the well known "Strelinger" four cycle motor.

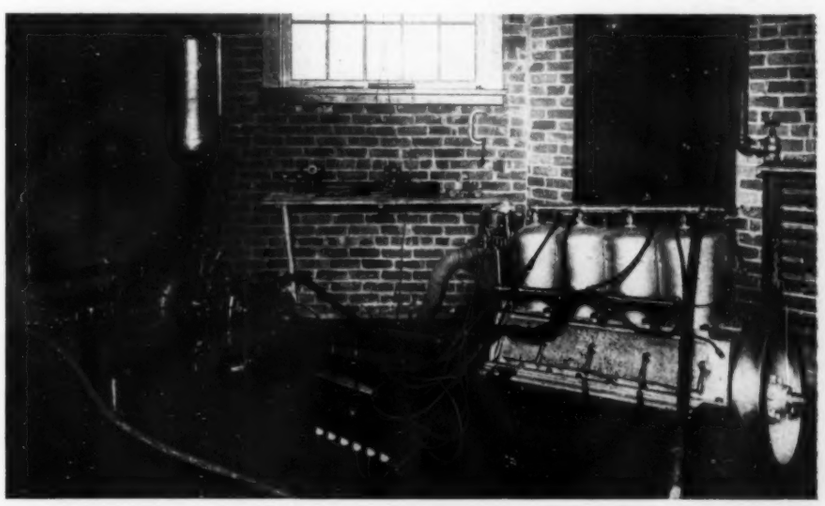
The Walter & Wittig Machine Shops, at Hartford, Connecticut, according to reports, will shortly place on the market a new type of marine engine.

The Arrow Boat Company is a new concern organized under the laws of **Florida,** having a capital stock of $100,000. The company expect to manufacture naphtha launches and motor speed boats constructed of Florida cedar and cypress, and will make a specialty of a 60 H. P. light weight speed boat, which it is hoped to have upon the market in time for the Winter regattas upon Lake Worth, this season.

The Motor and Sportsmen's Exhibition, of Montreal, will be held in the Coliseum Building from March 26th to April 3rd, under the management of E. M. Wilcox. All of the space in the building is on the ground floor and the whole exhibition will be under one roof. It is planned to have an exhibit of aeroplanes as well as motor boats, and the show gives every promise of success.

The Scripps Motor Company have at their factory in Detroit, a thoroughly equipped testing plant where every motor before being shipped, is run from ten to fifteen hours under load and the horse power developed under actual running conditions is taken by a Standard hydraulic brake. A card showing the test is then attached to the motor before it is sent out, the accuracy of which is guaranteed by the makers. It is said that this test generally shows from 25% upwards in excess of the horse power noted in the catalog. We show a photograph of the testing plant in operation.

The Standard Motor Construction Company, of 172 Whiton Street, Jersey City, have purchased from the Philadelphia Manufacturing Company, the factory which they have occupied for a number of years. The property acquired consists of thirty one lots with a large two story factory-building lo-



The testing plant of the Scripps Motor Co., of Detroit.

cated on the Newark and New York Railroad and having a frontage of from three hundred to four hundred feet with an average depth of two hundred feet.

The Packard Motor Yacht Company of Cincinnati, have taken a ten year lease of the property at 2259 Eastern Avenue, Cincinnati, which runs back to the river between Collins Avenue and Ferry Street. The company plan to spend several thousand dollars in remodeling the plant and their product will consist of motor boats of all sizes. A trestle is being constructed so that boats may be launched directly from the plant.

George Lawley & Son Corporation, of South Boston, announce that the report stating that they were to move to New London is incorrect. They have not as yet decided where they will go but it will undoubtedly be to some point in the vicinity of Boston.

William J. Deed, Jr., naval architect, a number of whose designs have appeared in our pages, has opened an office at 113 Devonshire St., Boston.

The Leyare Boat Works, of Ogdensburg, N. Y., have under construction at their yards several speed boats which will be used on the St. Lawrence this season. One of these was designed by Mr. J. L. Leyare for Alexander Peacock, of Pittsburg, and will be rated in the 40-foot class. The boat has a 6-foot beam, is built of 5/16th inch mahogany, and will be equipped with a 200 horsepower Jencick motor. A duplicate of Dixie II is being built from the designs of Tams, Lemoine and Crane, of New York, for Commodore F. G. Bourne, of Dark Island. She will be equipped with a 150 H. P. Smith & Mabley engine. Both of these racers will undoubtedly be entered in the Gold Cup Races of the American Power Boat Association at Alexandria Bay, N. Y. this summer.

The Syracuse Gas Engine Co., of Syracuse, N. Y., have developed a new rotary gasoline engine which they expect to place upon the market shortly. Mr. W. G. Marot, the secretary and treasurer of the company, was formerly with the Solvay Process Company. The Syracuse Engine Company have accepted the challenge issued by the General Machinery Company, makers of the Smalley Motor, and if both companies agree to the conditions, a race will be held upon Onondaga Lake during the month of August, for a purse of $1,000, to determine which engine can drive the same boat over a measured course in the shortest time.

The Frontier Engineering Company, Inc., of Detroit, manufacturers of the Bryant Propeller Wheel, reverse gears, etc., have recently taken possession of their new plant, but owing to the resultant confusion in getting things started, have no exhibit at the New York Motor Boat Show this year.

The Jeffery-Dewitt Company, of Newark, N. J., manufacturers of spark plugs, have called attention to a slight error in the "New Things" department of the February issue of MOTOR BOATING. It was stated that the full line of J-D spark plugs will spark in water, whereas it is the "Reliance" plug which alone has this feature.

The Detroit Engine Works, of Detroit, Mich., will so largely increase their output of engines for 1910 that their product will be double that of any previous year. The reason for this is the extraordinary demand throughout the winter for craft of all kinds. In order to secure demonstrating agents in every community, the company makes a special wholesale price for the first engine sold in each locality.

The Sterling Engine Company, of Buffalo, N. Y., state that the equipment of the 43-foot cruiser, owned by John Reilly, Jr., a description of which was given in the February issue of MOTOR BOATING, consists of a 30 h.p. Sterling motor, rather than 25-50 h.p., as was stated in the article.

The Brooks Manufacturing Company, of Saginaw, Mich., makers of "knockdown" boats, have announced a cut of 33⅓ per cent upon the price of all their product for 1910.

Ignition in Make-and-Break Engines.

(*Continued from page* 21).

quired with a given number of cells and an Edison spark coil, to obtain maximum spark energy from the coil, show that with a four-volt battery the current reaches its maximum value in .03 of a second. There are, however, quite a large number of engines in use, especially of the higher speed marine type, on which the time length of contact is less than .01 of a second, and in such cases it is obvious that unless the spark energy produced by this combination is in excess of that necessary for proper ignition, it would be necessary to increase the voltage of the battery by adding more cells in series, or to substitute a coil of lower resistance.

Propeller Slip-What it Really Is.

(*Continued from page* 18).

ing the pressure of the water near the center of the screw, and, hence, of course, the forward thrust on the ship.

It has been claimed that for shallow draft boats of moderate displacement the stern wheel utilizes the frictional wake to better advantage than the screw propeller in that it can be placed in a more effective position. Be that as it may, it is obvious that all the quantitative results already obtained apply equally to the stern wheel, the side wheel, or in fact to any form of propulsion whatever. With side wheels, however, we should approximate very nearly to the hypothesis of a propeller working without the assistance of a frictional wake. Indeed, not only is side wheel propulsion at a disadvantage in this respect, but the position of the wheels has the further drawback that the race from them, as it moves along the run, opposes a frictional resistance to the progress of the boat. On the other hand it must be conceded that the slow character of the motion of the side wheel tends to keep m large and x small.

It is of interest, as connecting the principles of a side wheel working in still water and a road wheel running on the roadway, to consider the case where m equals the mass of the earth. Then, since mx, the thrust, is a definite quantity, x will be very small; in fact, for all practical purposes negligible. Therefore, the efficiency (see Equation 3) will be unity. But it is not difficult to see that these suppositions really cover the case of a motor vehicle, for when a car propels itself on drv land the only mass that can be moved backwards is the solid earth itself. Therefore, it may be said that slip is a feature of all conceivable systems of auto-propulsion on land as on water, but that in some cases, as on land, it is negligible.

New Motor Boat Designs.

(*Continued from page* 31).

the engines are disabled, the vessel can make headway with favorable breeze.

On the port side of the passage is another state-room of the same character, and on the starboard side is a tiled bathroom having a porcelain tub, toilet and lavatory. There is hot and cold running water at all lavatories.

The after portion of the vessel is fitted up as a large saloon, which can also be arranged to sleep three persons very comfortably.

All the quarters below, except those for the crew, are handsomely paneled and fitted in Colonial white with mahogany doors and furniture. The boat is lighted throughout by electricity, having a special gasoline engine running a dynamo capable of lighting the vessel and a searchlight at the same time. There are also storage batteries of ample size. The equipment is complete in every way and includes a motor launch and one mahogany boat.

The deck aft is flush and a number of chairs can be used here and also just forward of the stack where there is a large bridge with a seat at its after end. This craft is in commission and will attract considerable attention in her home waters, on account of her fine appearance and excellent arrangement below.

Planking Methods and Materials.

(*Continued from page* 39).

There is another objection to this method, namely, that in the case of thin planking the tongue is very easily split off when the planks are forced together. This can be remedied by having a groove cut on both edges of the plank and a thin shim fitted in the groove before the next plank is put on. (See Fig. 7c). The grooves are heavily painted with white lead and require no further caulking.

There is one more system of planking, but it is not used for speed work. It is called the edge nailed or strip planking. It is made of narrow strips, which are fastened to the timbers and are then nailed together edgewise, as in Fig. 8. This planking has the same disadvantage as the tongue and groove style, but as it is used in heavier boats there is very little need of taking out a plank more than once in the boat's lifetime. It is very easily applied, as the strakes may be bent into place instead of being cut to fit.

It may come as a surprise to some that there are so many different systems of planking, particularly as they all look the same at a little distance, with the exception of the lap strake work. It will be seen, however, that every one of these systems is adapted to some certain class of boat or pocket book and to the skill of the one who will build the boat.

To sum up, if a boat has to be built cheaply, don't economize on the planking. It is better to go without the bright work in the cabin or cockpit, and to substitute galvanized iron for polished brass in the fittings, than it is to cheapen the planking, for if any one part of the boat should be good, it is the planks. A poorly planked boat will be a source of trouble as long as it floats, which won't be long. And so if you want to enjoy as much as possible, that greatest of outdoor sports, motor boating, see to it that your boat is at least planked well.

Chinese Motor Sampan.

(*Continued from page* 19).

photograph of the front view, is the eyes which are painted one on each side of the bow. It would be a very difficult matter indeed to find a native boat of any sort in the whole of the Chinese Empire which is not equipped with two eyes. The Chinese contention being that the boat cannot see unless it has eyes.

We believe that the sampan would make the best type of a motor boat for this harbor, as well as for many other harbors and waterways in China. It can stand more rough weather than any other boat of a similar size, and is capable of being beached or run alongside jetties with greatest facilities, in fact it is extremely well adapted to native conditions.

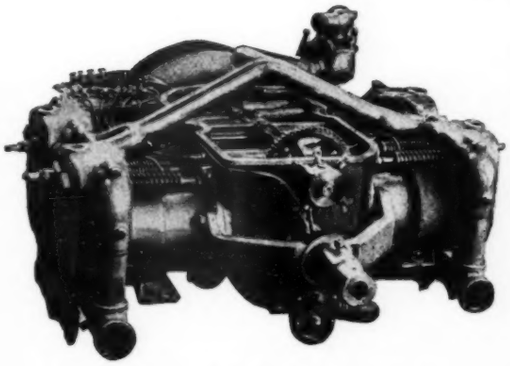
If the American motor manufacturers can equip this type of boat with a simply constructed, efficient, cheap type of motor, preferably kerosene, there should be a splendid market in China for the sort of motor that would answer these conditions.

This office has received a large number of enquiries from American manufacturers of motors and various sort of motor boats, and as your journal appears to have a wide circulation among these manufacturers, we take this opportunity of reaching them through you, by depending upon you to give this article full publicity among those manufacturers.

Your obedient servant,

JULIAN H. ARNOLD,
American Consul.

Motors for Motor Boats.



The Anderson 4-cylinder horizontal engine.

The Model B Anderson.

The cut shown herewith illustrates one of the latest products of the Anderson Motor Co., of Anderson, Ind. This engine is of the four cylinder, horizontal type with a bore of 5½ inches and a stroke of 5 inches and is rated at 40 horsepower. These motors are made with the particular idea of being easily accessible and, with this in view, the cover of the crankcase is so arranged that it can be easily removed without disturbing any part of the engine. When this cover is removed, as will be noted in the illustration, the opening is very large and by turning the shaft so that each crank is at the top of the case, all bearings can be easily adjusted without disturbing the cams or time shafts. The standard equipment with this motor includes a Schebler carbureter, which can be placed in any position found necessary upon mounting the motor.

The Syracuse Engine.

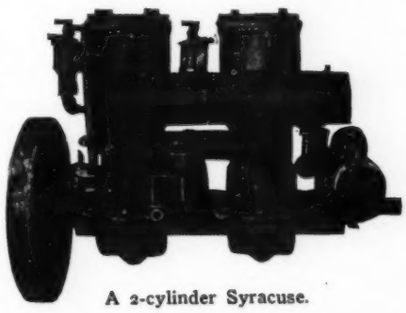
These engines, made by the Syracuse Gas Engine Co., of Syracuse, N. Y., are built entirely of aluminum with the exception of the working parts and that portion of the cylinders next to the piston travel. They are made in all sizes from one to six cylinder and from 4 to 120 horsepower. We show herewith a cut of their two cylinder motor in one of the smaller sizes. The construction of these engines is said to eliminate the danger of cracked cylinders, which is present in some engines having aluminum cylinders with cast iron lining, and which is due principally to the fact that the co-efficient of expansion of aluminum is .002 while that of cast iron is .001. At the same time these engines are constructed as light as is possible with perfect safety, having their bases, sub-bases, heads and all pipes built of aluminum. An entirely new feature of this engine in the multiple cylinder types is an arrangement which avoids the necessity of using a number of carbureters on a six cylinder engine, and at the same time is said to do away absolutely with back firing.

The Loveland Motor.

We show herewith a cut of one of the latest models manufactured by the Loveland Manufacturing Company, of Bridgeton, N. J. These motors are made in both two and four cycle types, the two cycle being all of single cylinder design and the four cycle of one, two and four cylinder design. They range in horsepower from 2 to 60-65 and are equipped with make-and-break ignition of a special design, having but one spring, or with the Osswell Ignition System, which is waterproof. All bearings of these engines are phosphor bronze and babbitt metal. The lubrication system is through sight feed oilers, and a Schebler carbureter forms a part of the equipment of each engine.

The New Northwestern.

Shown herewith is a cut of a new motor placed upon the market by the Northwestern Steel and Iron Works, of Eau Claire, Wis. This is a smaller size of the same engines which are used in the Government Harbor Service and Chicago Police

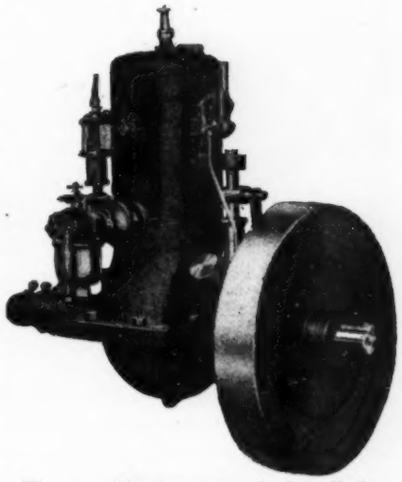


A 2-cylinder Syracuse.

Boats. They are said to give a great amount of power in proportion to their size, and are very simple in construction, and at the same time very economical. They are made in sizes of from 2 to 10 horsepower. A special offer is being made by this company upon their small single cylinder motor with complete outfit ready to install in a boat.

The Pierce-Budd Motor.

The illustration herewith shows the starboard side of the latest 3 cylinder engines manufactured by the Pierce-Budd Company, of Bay City, Michigan. It will be noticed that these engines have no pipes or

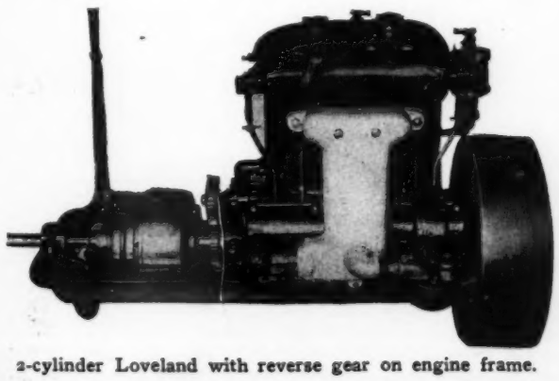


The new Northwestern single cylinder.

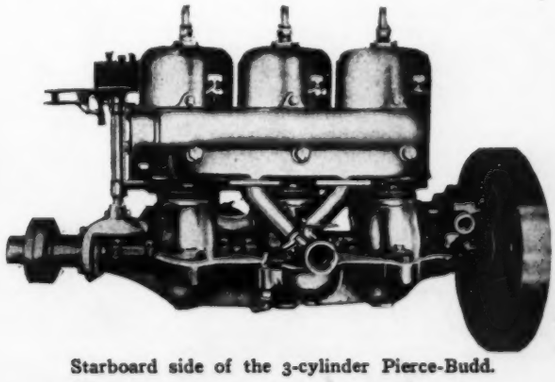
pipe fittings of any kind, all water passages being cast in the base and so designed that they add strength to the motor, and at the same time keep the weight reduced as much as possible. The bases of these engines are made in two parts, the upper and lower part each forming one continuous casting for any number of cylinders. The result is a much more rigid and stronger construction. It will be noted from the cut that the intake manifold is so arranged that the charge is received into each cylinder at the same time, since the two intake pipes enter the manifold at equal distances from the cylinders.

The 1910 Jager.

The product of the Charles J. Jager Company, of Boston, will include for 1910 four distinct classes of engines, i. e., the heavy duty, slow speed type; the medium weight, medium speed; the light weight, high speed; and the two-stroke cycle, light weight, high power type. These range in size from 3 to 150 horsepower, the first three being four-cycle, and are made in all types from one to six cylinders. One of the most popular models is the high speed, high duty, four-cylinder type F, equipped with bulkhead starting device, with reverse, spark and throttle controls, mechanical lubricator and compression relief through the bulkhead. One of the principal features of this motor is the use of a safety rod which prevents the use of the starting handle when the spark is in an advanced position. These motors are intended primarily for the speedy runabout where a large amount of power is required in connection with minimum weight and bulk. In a recent test of one of these motors installed in a speed boat, over a course 4½ nautical miles in length, the average percentage of variation in running time for 24 laps was one-eighth of one per cent.



2-cylinder Loveland with reverse gear on engine frame.



Starboard side of the 3-cylinder Pierce-Budd.

Chum, the motor boat "born and bred of the sea."

How to Make a Chart Case.

(*Continued from page 39.*)

white lead) and nail a ⅜ inch x ¼ inch stop forming seat for glass. Near bottom of sides, a similar stop ¼ inch x ¼ inch to form stop for the bottom—none on ends. Bore a 1¼ inch hole in center of each end. In one end only, two ⅜ inch x 1⅛ inch vertical slots exactly opposite where the center of each roller is to come. These permit the spindle of the knobs which turn the rollers (Fig. 4) to come through to the outside.

The roller bearing pieces (Fig. 3) should be ½ inch thick. Bore two ¾ inch holes through each, to take the pins in the ends of the rollers. The vertical notch is to permit the roller bearing being inserted from bottom without interference of the axle (Fig. 5). Near bottom, two brass hooks to which the springs (A) are to be caught.

The rollers (Fig. 4) should be of soft wood if the charts are to be held by thumb-tacks. Another way is to cut a groove the entire length of the roller, 1/16 inch wide and ½ inch deep, folding the chart-edge over and into the groove, similar to inserting a camera film in the winding spool. In each end bore a ¾ inch hole and glue in a pin projecting ½ inch. In one end only of each roller, bore a ¾ inch hole in the pin to take the spindle of the knob (B). The knobs are large size screen door knobs and roses and regular ¼ inch spindles (should cost about 50c.). Remove the short spindle on the knob and replace with the regular. When attached to the knob by the middle hole, about 3 inches remains between the rose (C) and the end. Opposite the middle (or either of the other) holes in the end, bore a hole through the roller, making it larger at top (funnel shape) and set a split pin into same and through the hole in the spindle.

The axle (Fig. 5) has a sunk bearing at each end, of width equal to the thickness of Fig. 6.

Now assemble the pieces. First glue (or bed in white lead) and nail the sides to the ends. This method leaves the ends of the side pieces to show on the ends of the case. If you object to this, the corners may be mitred in which case add 1¾ inch to the long dimension of the ends (Fig. 2). Set the glass in putty and secure with tins, then putty outside or use quarter-round wood moulding bedded in putty. Now put the axle through and glue or wedge tight. At the end opposite the knobs there should be ½ inch from the end of the case to the sunk bearing, 2½ inches at the other. Fasten the springs A (¼ inch brass) by staples driven into the sides (not ends) ⅜ inch away from the ends. Now place the rollers in the roller bearings and slide them up into the case, hooking the springs over the hooks and they will hold the rollers in and up against the glass. Put the spindles of the knobs through from outside and slip the split pin through the hole in the roller. To take the rollers out merely remove the pins and knobs and unhook the springs.

Now cut the bottom (not shown), a plain board 32 inches x 10 inches. Fit it up from the bottom and hold in place by four brass turn-buttons.

Now build in stand. The ends (Fig. 6) ⅞ inch thick, should have a sunk bearing in top to receive the bearing of the end of the axle (Fig. 5). The bottom should have 1¼ inch x ⅞ inch notch, to take the horizontal brace (not shown) which is of same size and 38½ inches long, nailed in place.

For finish, I would suggest white paint on inside where exposed. Outside, stain and at least two coats spar varnish, sandpapered lightly on the stain and first coat of varnish.

H. S. KIMBALL, Tarrytown, N. Y.

Compactness and Simplicity.

THE chart case described herein was made from pine, stained and varnished with spar varnish.

The following are materials necessary: For bottom, one piece 12 ¾ inches x 36¾ inches; sides, 5 inches x 36¾ inches x ⅜ inch; ends, 5 inches x 12 inches x ⅜ inch. One piece of glass 12 inches x 36 inches; molding, over glass, top edge of case, 8 feet 6 inches (lineal feet) of about 3/16 x ¾ inch, inside edge beveled; strips under glass (see "b" Fig. 2) 8 lineal feet of 3/16 inch or ¼ inch square two 36 inch curtain rollers (remove springs and plug hollow ends); some wire for pins and "cranks"; four brass tension springs (see Fig. 2) three hinges and three hooks and eyes.

Bottom should have about three cleats, to be placed inside or outside as desired. The strips ("b" Fig. 2) should be placed the thickness of the glass below top edge and if a fresh strip of electrician's tape is placed under the molding, before fastening down it will make a tight joint, preventing moisture from working under glass into case. Figure 4 is the layout for slots in end "B" of Fig. 1; the purpose of slots being to allow up and down movement to rollers as the chart is wound from one to the other, thereby increasing or decreasing diameter of rolls.

The springs keep chart tight and flat against the glass. Screws at "a" Fig. 2 should be a loose fit to allow easy movement of pieces pivoted thereon.

The chart is thumb-tacked to the flat places on rollers and several charts can be wound or rollers at one time by pasting their edges together, thus making a continuous sheet.

J. P. COLWELL, Akron, Ohio.

The Achievement of Chum.

WE reproduce above a photograph of Chum, the 30-footer which performed so valiantly in connection with the grounding of Antilla off the Bahama Banks last October.

Antilla flashed the "C.Q.D." to the Southern Pacific Steamship Co.'s offices and her sister ship, the El Dia, was sent to the rescue. Early in the morning on October 16th El Dia anchored about two miles from the Antilla.

Capt. Geo. W. Mason, of El Dia, is the owner of Chum, a 30 foot x 6 foot cruiser, powered with a double cylinder, 20 H.P. Gray motor, which he carries on deck and uses during his stops between New York and Galveston. According to the report furnished us, the long ship's derrick dropped Chum into a decidedly choppy sea and a life boat with a crew of 12 men was towed to the stranded steamer. Preparations were made for an attempt to free Antilla and for three days Chum acted as dispatch boat between the steamers.

After the plan of operation had been determined upon, Chum carried the big hemp hawser to the grounded vessel; the powerful engines of El Dia were set in motion, the heavy cable became tense, strained, and snapped with the report of a great gun. The seas were now rolling heavily and the released strain swung El Dia onto a reef; but she immediately floated free.

Chum is literally born and bred of the sea. She was built from Capt. Mason's own design, on the deck of El Dia during the trips between New York and Galveston.

The Mexican cruiser Maria Gil Romero, owned by A. O. F. Hanke, of Manzanillo, Colima, Mexico. She is a 40-footer and has a 20 h. p., four-cylinder Holliday motor which gives her a speed of nine miles an hour.

Index to Advertisements.

Allers & Co., H. A. 96
Aluminum Foundry Co. 82
Anderson Engine Co. 98
Atlantic Co. 82-83
Atwater-Kent Mfg. Wks. 105
Autoforce Ventilating System 102
Autogenous Welding Equipment Co. 82
Automatic Bilge Bailer Co. 100

B. B. M. Paint Co. 97
Bath Marine Construction Co. 98
Belle Isle Motor 104
Blake Electrical Co. 100
Boucher Mfg. Co., H. E. 102
Bowes & Watts 66
Bridgeport Motor Co. 77
Brooks Mfg. Co. 72
Bruns, Kimball & Co. 66
Bryant & Berry Co. 102
Buffalo Gasolene Motor Co. 108
Buffalo Show 86

Caille Perfection Motor Co. 74
Camden Anchor-Rockland Machine Co. 82
Cape Cod Power Dory Co. 100
Carpenter & Co., Geo. B. 103
Cary, Smith & Ferris 66
Cavito Underwater Exhaust Co. 98
Coates Clipper Mfg. Co. 102
Columbian Brass Foundry 77
Columbian Rope Co. 96
Commercial Acetylene Co. 77
Cooley Mfg. Co. 100
Cox & Stevens 60-61-66
Craig, James 98
Curtiss Co., J. H. 97
Cutter, Geo. A. 100

Dayton Electrical Mfg. Co. 104
Dean Mfg. Co. 87
Defoe Boat & Motor Works 100
Desmond Co. 104
Detroit Auto Specialty Co. 103
Detroit Boat Co. 100
Detroit Engine Works 82-98
Dodge Engine Co. 101
Doman Co., H. C. 82
Dow Mfg. Co. 87
Dunn, Walter E. 98
Durkee, C. D., Co. 93-94-95-96-97

Edgar Mfg. Co. 102
Eisemann Magneto Co. 98
Eldridge Engine Co. 73
Electric Launch Co., The ..... 2d Cover
Electric Speedometer 91
Elliott, G. F. 102
Emerson Engine Co. 75
Erd Motor Co. 91
Evans Stamping and Plating Co. 100

Factory Sales Corp. 108
Ferdinand & Co., L. W. 78
Ferro Machine & Foundry Co. 104
Foraker & Co. 94
Frisbie-Heft Motor Co. 84
Frontier Engineering Co. 84

Gardner, Wm. 65
Gas Engine and P. Co. and Chas. Seabury & Co., Cons. 88
Gielow & Orr 52-53-66
Gies Gear Co. 106
Gray Motor Co. 71
Gray-Hawley Mfg. Co. 104
Gray & Prior Machine Co. 101
Greenslade Oil Co. 82

Haddock, R. M. 66
Hardy Co., R. E. 95
Havoline Oil Co. 107
Heinze Electric Co. 83
Hill, R. S. 100
Holliday Engineering Works 104
Holmes Motor Co. 102
Hopkins & Co., John C. 77
Huberth & Gabel 99
Hudson Yacht & Boat Co. 100

Ideal Switch Co. 102

Janney, Steinmetz & Co. 102
Jeffery-Dewitt Co. 103
Jones, Frank Bowne 63
Jones Co., S. M. 80

Kaufmann, Chas. 100
Kennebec Boat Co. 102
Kenyon Co., R. L. ..... 3rd Cover
Kinney Mfg. Co. 102
Koven & Bros., L. O. 100
Kuhls, H. B. F. 101
K. W. Ignition Co. 70

Lindley & Co., W. H. 100
Liquid Copper Co. 98
Loveland Mfg. Co. 77
Luders Motor Cons. Co. 100

Mathews Boat Co. 85
Mathisen Boat Co. 76
Mechanical Devices Co. 76
McIntosh Yacht Agency 58-59
Mianus Motor Works 77
Michigan Steel Boat Co. 102
Michigan Wheel Co. 76
Milton Boat Works 82
Monitor Boat & Engine Co. 102
Montgomery, Jr., Richard M. 100
Morss Co., A. S. 86
Motor 98
Motor & Mfg. Works Co. 102
Mower, Chas. D. 66
Mullins Co., W. H. 89

National Motor Boat & Engine Show 86
National Steel Products Company 77
Naval Architects & Yacht Brokers 52-66
N. Y. Coil Co. 95
Nilson Yacht Bldg. Co. 66
Nock, Frederic S. 66
Northwestern Steel & Iron Works 76

Oakes & Dow Co. 78
Orswell Igniter Co. 100
Osburn Electric Co. 84

Packard Electric Co. 85
Palmer Bros. 106
Perry-Austin Co. 96
Pfanstiehl Electrical Labty 102
Pierce-Budd & Co. 90
Pierce Motor Co. 98
Pioneer Boat & Pattern Co. 85
Pyrene Co. 96

Racine Boat Mfg. Co. 79
Remington Oil Engine Co. 99
Rhode Island Motor Co. 101
Richardson Engineering Co. 89
Roberts Motor Co. 75
Roper & Co., C. F. ..... 4th Cover
Royal Engine Co. 83

Sagamore Engine Co. 100
Samson Cordage Works 85
Sapinol Chemical Co. 94
Scripps Motor Co. 106
Seaman, Stanley M. 54-55
Sears, E. H. 102
Siegel Cooper Co. 76
Skene, Norman L. 66
Smith & Baldridge Co. 103
Smith & Co., Edward 74
Snow & Petrelli Mfg. Co. 104
Springfield Motor Co. 102
Standard Motor Cons. Co. ..... 2d Cover
Stanley Co. 98
Stickler Wheelless Wheel Co. 102
Strelinger Marine Engine Co. 82
Sterling Engine Co. ..... 3rd Cover
Syracuse Gas Engine Co. 68-69

Tams, Lemoine & Crane 56-57
Termaat & Monahan 86
Thomas & Co., W. E. 102
Thompson Co., J. H. 102
Thrall Motor Co. 81
Toppan Boat Mfg. Co. 98-100
Torrey Roller Bushing Works 88
Trebert, H L. F. 104
Trimount Rotary Power Co. 76
Truscott Boat Mfg. Co. 74
Tuttle Co., D. M. 90

Upson-Walton Co. 84
U. S. Graphite Co. 94

Valley Boat & Engine Co. 78
Van Wagner Mfg. Co, E. B. 102
Vim Motor Company 92

Waterman Marine Motor Co. 78
Watres Mfg. Co. 95-102
Welin Davit, Lane & De Groot Co. 76
Wells, Theodore D. 66
Western Launch Co. 76
White & Co., E. M. 83
Whittaker, Morris 66
Whittelsey & Whittelsey 62-63-66
Wilkinson Co., Wm. H. 100
Wilmarth & Morman Co. 102
Wolverine Motor Works 78
Wonder Mfg. Co. 77

Yankee Co. 97
Y. M. C. A. 98

Not What We Say - What *They* Say -

MoToR Boating is a return bringer—a natural result of giving motor boatists an interesting, informative, useful magazine.

Because they believe in its editorial pages, they believe in its advertising pages—and make it profitable for the manufacturer to make his announcements to the motor boating world in MoToR Boating.

For example—not what we say but what they say—

Cox & Stevens, the well-known boat and marine insurance brokers, etc., of 15 William Street, New York, in answer to some one's inquiry, wrote:

"We have used and are still using MoToR Boating as an advertising medium for the sale and charter of yachts and motor boats. We have sold a number of boats through this advertising and consider the paper a good one for the purpose. Yours very truly,

(signed) *COX & STEVENS.*

The Thrall Motor Co., of Detroit, Mich., surprised us with the following:

Dear Sirs:— Enclosed you will find copy for one page advertisement to appear in your January issue.

A few facts may be of interest to you. As you are aware, we used a full page during the past season. The results obtained were very satisfactory.

We keep an accurate record of all inquiries and as near as possible trace all sales to their sources. It gives us pleasure to say that the inquiries from MoToR Boating produce a large percentage of sales.

The Thrall Motor Company is just now preparing to take possession of their large new factory, which will be devoted exclusively to the manufacture of Refined Motors. One of our new unique catalogs will be mailed you the first of the year.

We wish to extend to you the greetings of the season, and wish you continued success with your publication. Yours very truly,

(signed) *THRALL MOTOR COMPANY,*
Per C. W. Stewart, Sec.

Advertisers Put Their Money Where It Will Do the Most Good DO YOU?

NAVAL ARCHITECTS
ENGINEERS
AND
BROKERS

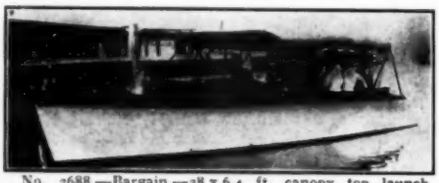
GIELOW & ORR

52 Broadway, New York

Telephone, 4673 Broad
Cable Address:
Crogie, New York
A. B. C. Code

Plans, Specifications and Estimates Furnished for All Requirements, including High Speed and Cruising, Steam, Motor, Sail and Auxiliary Yachts; Houseboats and Commercial Vessels. Alterations Supervised

Large List of American and European Yachts of All Types for Sale, Charter or Exchange; Commercial Vessels. Marine Insurance. Descriptions and Photos submitted Upon Receipt of Inquiry.



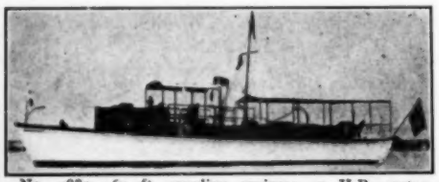
No. 2688.—Bargain.—28 x 6.4 ft. canopy top launch. Speed, 15 miles. 25 H.P. Ferro motor, new 1908. Roomy and comfortable. Gielow & Orr, 52 Broadway, New York.

No. 2789.—For Sale or Exchange.—Cabin steam launch (oil burner), 49 x 8.6 x 3.7 ft. Built 1902 by day's labor. Accommodations for 6 to 8, toilet, etc. Speed, 10 miles. 20 H.P., 1 cylinder, high speed engine. Ofeldt boiler; new, 1907. Hull and machinery in excellent condition. Will accept in trade a motor car. Apply to Gielow & Orr, 52 Broadway, New York City.

No. 2644.—Attractive, very desirable, 32 x 8.2 ft. cruiser. Handsomely finished. 18 H.P. Jager motor. Gielow & Orr, 52 Broadway, New York.

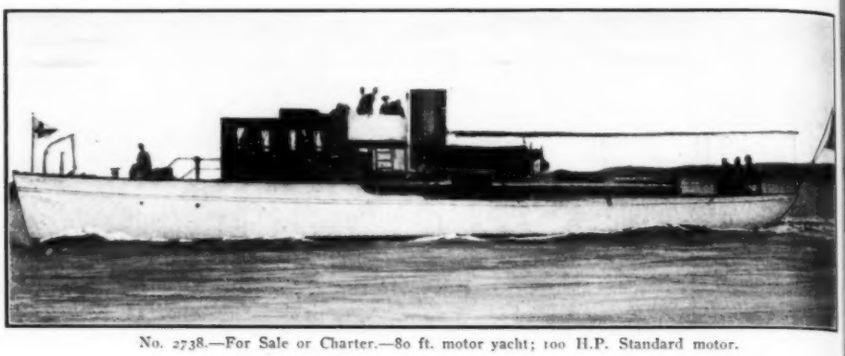
No. 1914.—32 x 9 ft. raised deck cruiser. A1 seaboat. 20 H.P. Buffalo motor. Unusually complete. Gielow & Orr, 52 Broadway, New York.

No. 2717.—For Sale.—Mahogany trunk cabin cruiser, 33 x 8 ft. Launched last July. Best construction. 15 H.P., 4-cylinder, 4-cycle engine. Equipment complete and of best. Bargain. Gielow & Orr, 52 Broadway, New York.

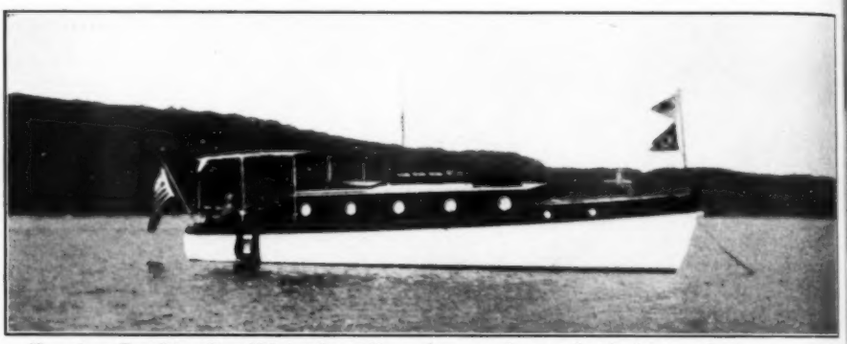


No. 1885.—60 ft. gasoline cruiser; 40 H.P. motor. Price attractive.

No. 2378.—Bargain.—45 x 8 ft. mahogany cruiser. 15 H.P. 20th Century motor. Good-sized cockpit. Gielow & Orr, 52 Broadway, New York.



No. 2738.—For Sale or Charter.—80 ft. motor yacht; 100 H.P. Standard motor.



No. 2655.—For Sale.—Beautiful hunting cabin cruiser; 40 ft. o.a.; 8.3 ft. beam, 3 ft. draught. Speed about 12 miles. Inside trim, red and white mahogany. Cabin trunk, cockpit staving, companionway, etc., of mahogany. Galley, ice box, toilet, 50 gal. water tank. Saloon sleeps four. Engine room bunk and Pullman berth. Electric lights throughout. 24 H. P. Lamb 4-cylinder engine, practically new; storage battery, dynamo. Brass and galvanized lights. Brass searchlight; 4 gas tanks, 40 gals. each. Complete inventory. Outside control; a one man boat. Owner has run the boat to Shelter Island alone. Price low. Apply to Gielow & Orr, 52 Broadway, New York.

No. 2686.—For Sale.—Mahogany cabin cruiser, 40 x 9 x 2.6 ft. Fitted with producer gas plant, giving speed of 9 miles steady, consisting of 35 H.P., 4-cylinder, 4-cycle engine fitted to gas generator, with reverse gear. No possible danger of fire or explosion. Cost of operation one-tenth that of gasoline. Handsome craft; built 1909; joiner work, Honduras mahogany throughout. Construction, very best; all copper riveted. Large saloon accommodating 4; galley, toilet room, etc. Further particulars from Gielow & Orr, 52 Broadway, New York City.

No. 2868.—For Sale.—Trunk cabin cruiser, 36 x 9.6 ft. Launched last August. 24 H.P. Lamb engine. Gielow & Orr, 52 Broadway, New York.

NAVAL ARCHITECTS
ENGINEERS
AND
BROKERS

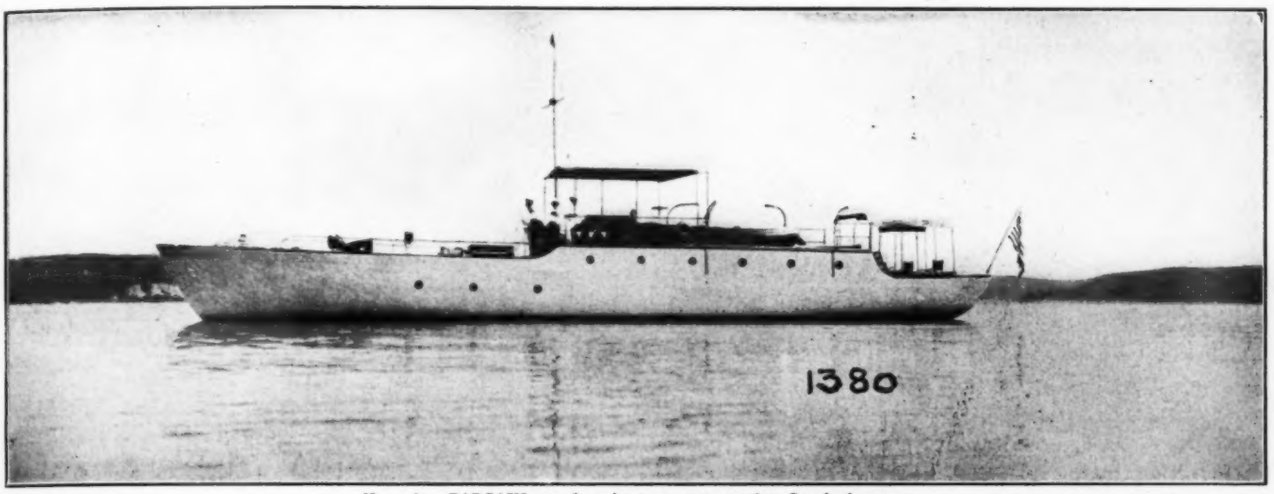
GIELOW & ORR

52 Broadway, New York

Telephone, 4673 Broad
Cable Address:
Crogie, New York
A. B. C. Code

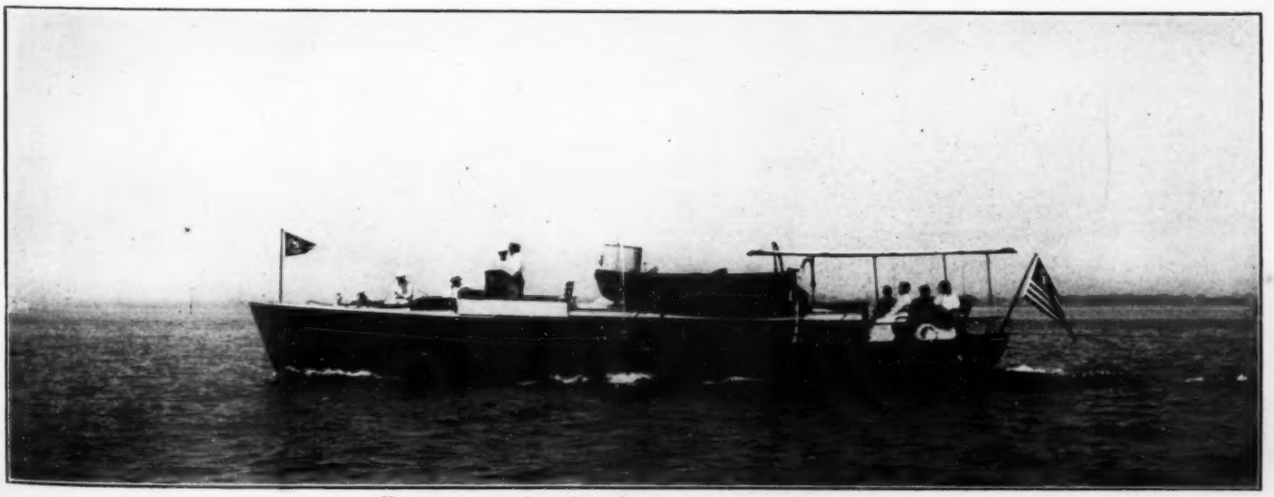
Plans, Specifications and Estimates Furnished for All Requirements, including High Speed and Cruising, Steam, Motor, Sail and Auxiliary Yachts; Houseboats and Commercial Vessels. Alterations Supervised.

Large List of American and European Yachts of All Types for Sale, Charter or Exchange; Commercial Vessels. Marine Insurance. Descriptions and Photos submitted Upon Receipt of Inquiry.



No. 1380.—BARGAIN.—71 ft. twin screw motor yacht; Standard motors.
Please mention MOTOR BOATING.

No. 2694.—39 ft. cruiser; 18 h.p. Standard. Very able.
Please mention MOTOR BOATING.



No. 1950.—50 x 10 ft. cruiser. Speed, 13 to 14 miles. Fully found.
Please mention MOTOR BOATING.

YACHT BROKER

STANLEY M. SEAMAN

MARINE INSURANCE

Established 1900

Telephone 3479 Cortlandt 220 BROADWAY, NEW YORK CITY Cable Huntsea

Am offering the following yachts actually on the market at prices representing 20 to 60 % of cost.

126 STEAM YACHTS, 100 to 253 ft., Steel, Composite and Wood Construction, including all Types and Sizes, Seagoing, Coast and Express Cruisers.

38 SHOAL DRAUGHT CRUISERS, 50 to 110 ft., Steel and Wood Construction. Ideal for Southern use.

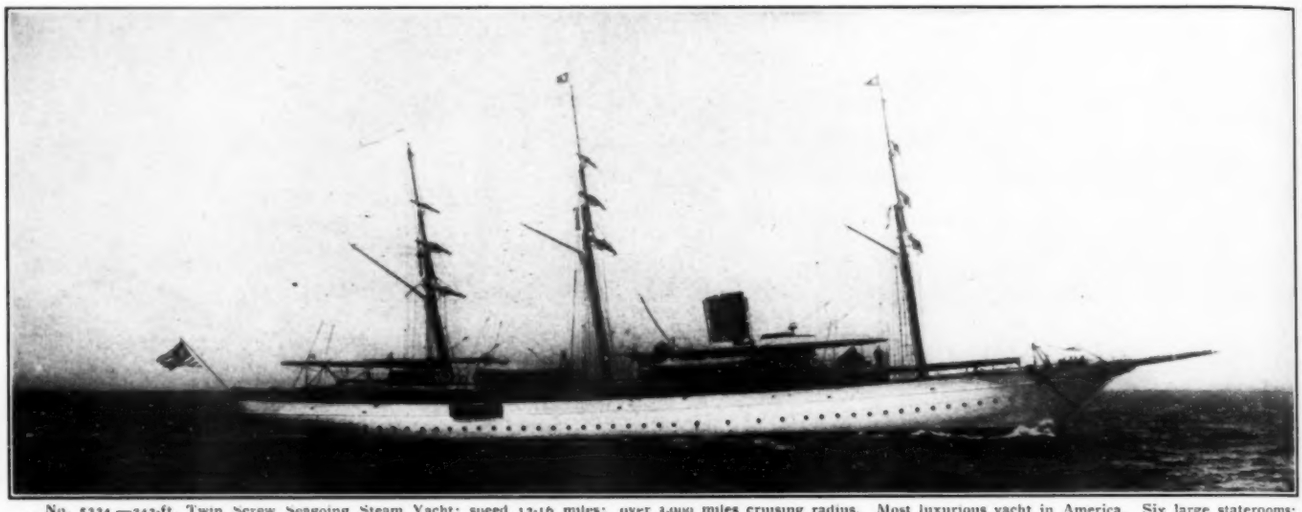
379 GASOLENE POWERED CRAFT, 25 to 90 ft., Sea, Coast and Inland Cruisers, Raised Deck, Hunting and Glass Cabin Types. Open and Navy Top Launches.

180 AUXILIARIES, 35 to 135 ft., Seagoing, Coast and Inland Cruisers, Schooner, Yawl and Ketch Rigs. Large list Sloops, Knockabouts and Cats with power.

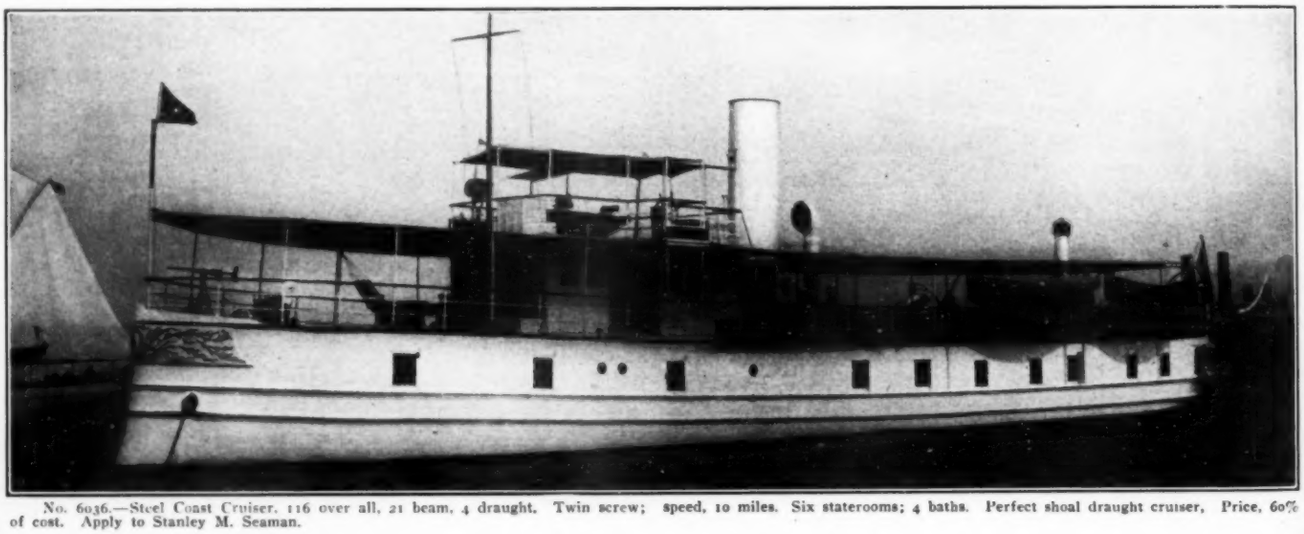
89 SCHOONERS AND YAWLS, 30 to 138 ft. C/B & K. to suit any purpose, many adapted for power.

240 KNOCKABOUTS AND SLOOPS, all modern boats for racing and cruising. Small Open Sail Boats C/B & K.

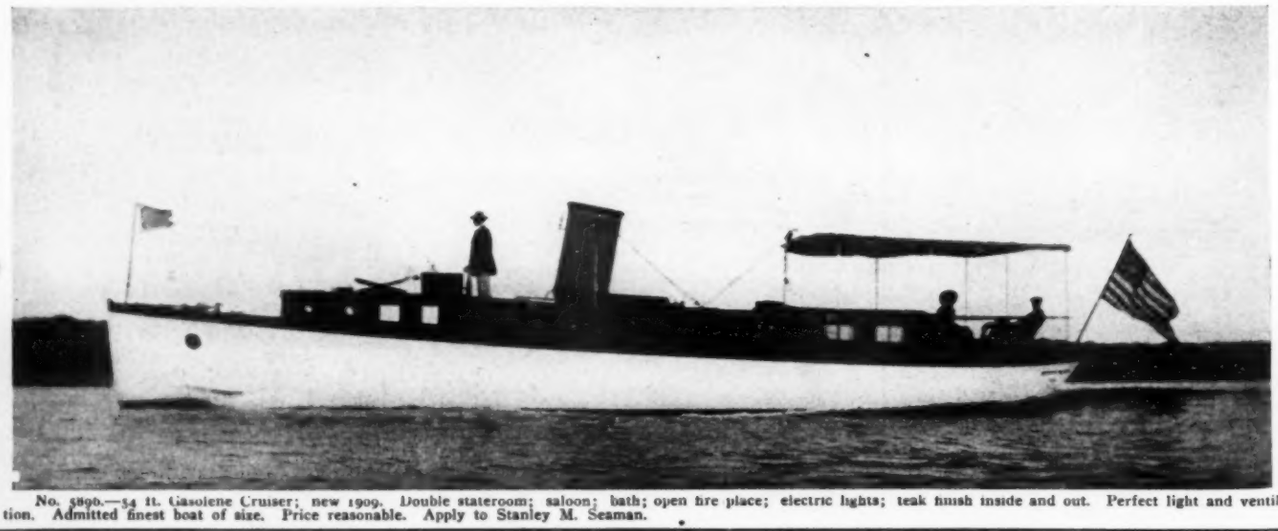
Detailed descriptions, Plans and Photographs forwarded immediately on request.



No. 5334.—243-ft. Twin Screw Seagoing Steam Yacht; speed 13-16 miles; over 3,000 miles cruising radius. Most luxurious yacht in America. Six large staterooms; 3 baths; 3 saloons in hand-carved mahogany and tapestry. Steam laundry. Electric lights; steam heat. Ice machine. In perfect condition. Engines and boilers only used on trial trip. Suitable auxiliary Naval Vessel. Price, one-fifth of cost. Apply to Stanley M. Seaman.

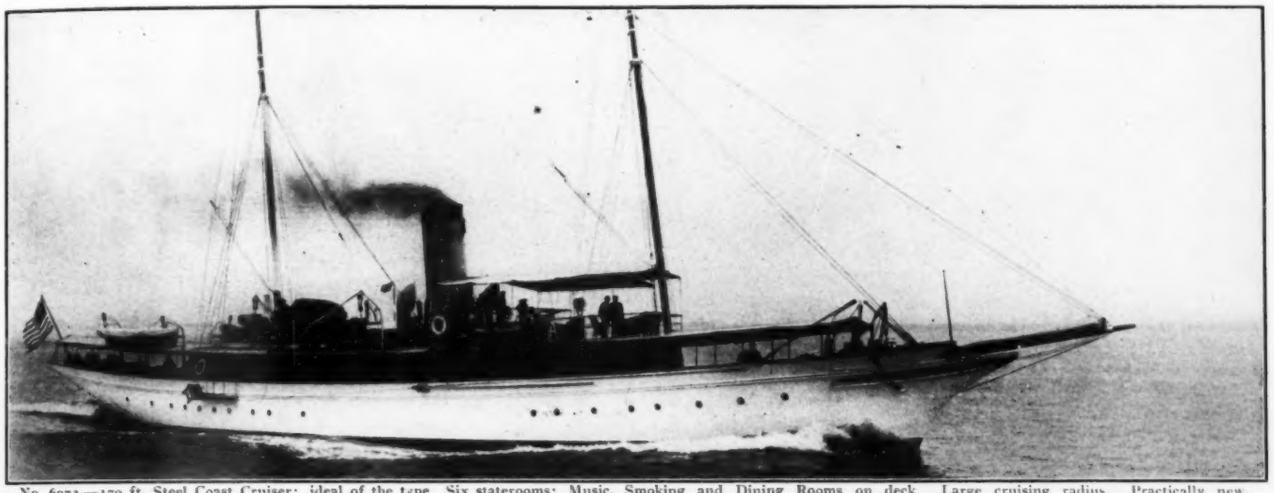


No. 6036.—Steel Coast Cruiser, 116 over all, 21 beam, 4 draught. Twin screw; speed, 10 miles. Six staterooms; 4 baths. Perfect shoal draught cruiser, Price, 60% of cost. Apply to Stanley M. Seaman.

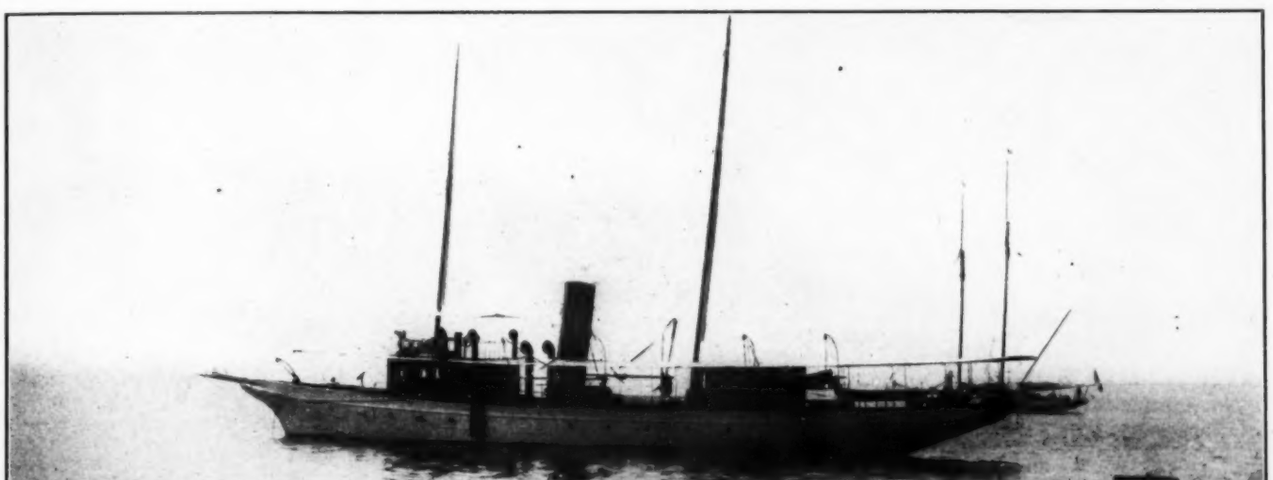


No. 5890.—54 ft. Gasolene Cruiser; new 1909. Double stateroom; saloon; bath; open fire place; electric lights; teak finish inside and out. Perfect light and ventilation. Admitted finest boat of size. Price reasonable. Apply to Stanley M. Seaman.

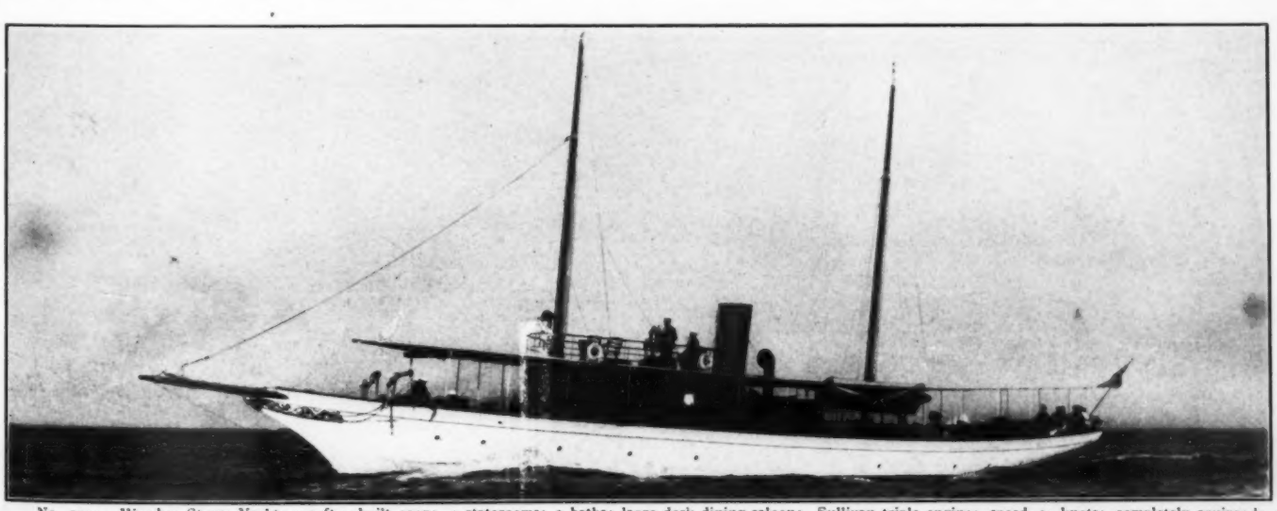
STANLEY M. SEAMAN'S PAGE



No. 6073.—170 ft. Steel Coast Cruiser; ideal of the type. Six staterooms; Music, Smoking and Dining Rooms on deck. Large cruising radius. Practically new. Available one half cost. Condition warranted by Stanley M. Seaman.



No. 6052.—128 ft. Steel Coast Cruiser. Two double and 2 single staterooms; bath; all modern conveniences. $9,000 spent, new boilers, deck, etc., 1909; speed, 12 knots; coal consumption, 2 tons 10 hours; maintained more economically than gasolene yacht same size. Offered by Estate. Fully equipped. Condition warranted by Stanley M. Seaman. (Sold too late for withdrawal of advertisement.)



No. 5144.—Wooden Steam Yacht, 117 ft.; built 1907; 4 staterooms; 2 baths; large deck dining saloon; Sullivan triple engine; speed, 12 knots; completely equipped; maintained more economically than gasolene same size and speed. Price very low; owner building one larger. Condition warranted by Stanley M. Seaman.

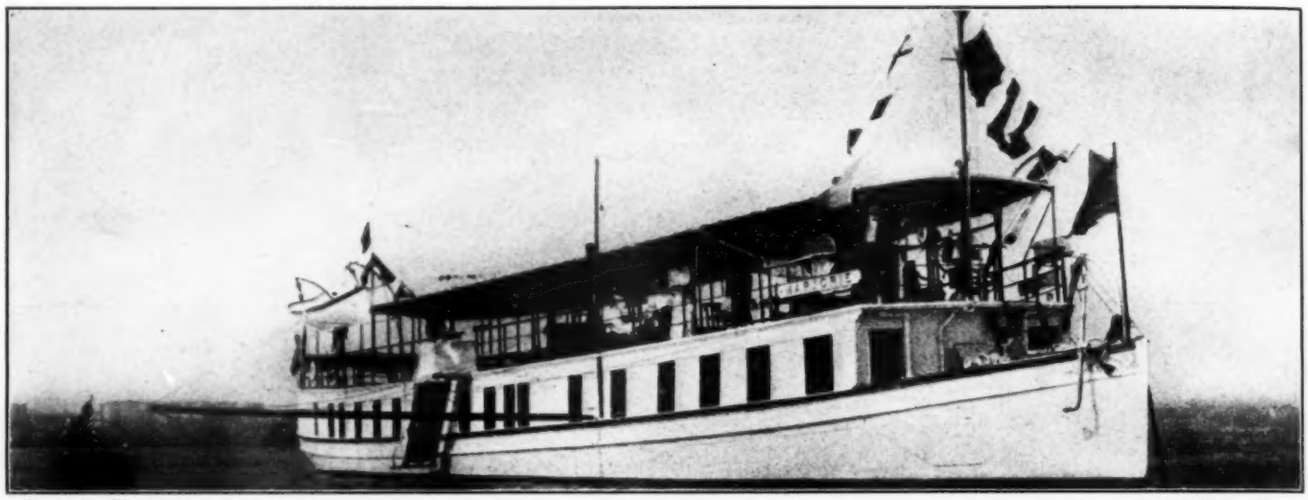
TAMS, LEMOINE & CRANE

52 PINE STREET, NEW YORK CITY

TELEPHONE 4510 JOHN

YACHT AND SHIP BROKERS. NAVAL ARCHITECTS AND MARINE ENGINEERS. MARINE INSURANCE

CORRESPONDENTS IN GREAT BRITAIN, MESSRS. G. L. WATSON & CO., GLASGOW

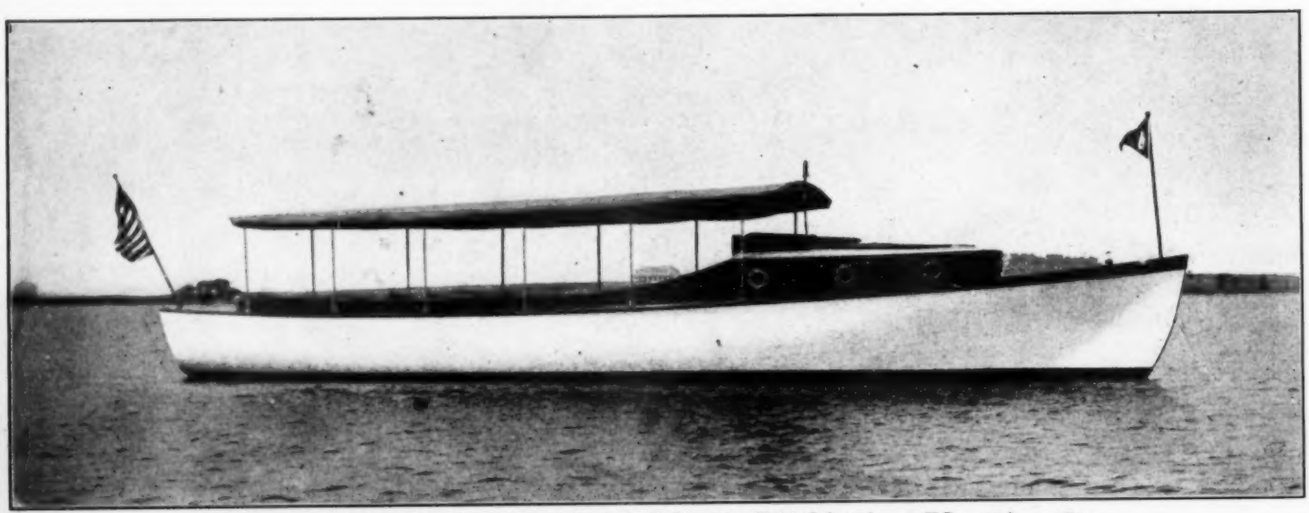


No. 1808.—For sale, at an attractive figure, twin screw power houseboat, 123'x16'x36". Two 75 H.P. Standard motors. Unusually good condition. Electric light. Five staterooms, bathroom. Good speed.

Please mention MOTOR BOATING.

No. 7275.—For Sale.—Motor yacht, 72'x68'x13' 8"x3' 8". Two 25 H.P. Standard motors. Bargain.

Please mention MOTOR BOATING.



No. 7704.—For Sale.—Ideal day cruiser, 45'x43'x9'. Built 1909. Finished in teak. 30 H.P.; speed, 13 miles.

Please mention MOTOR BOATING.

TAMS, LEMOINE & CRANE

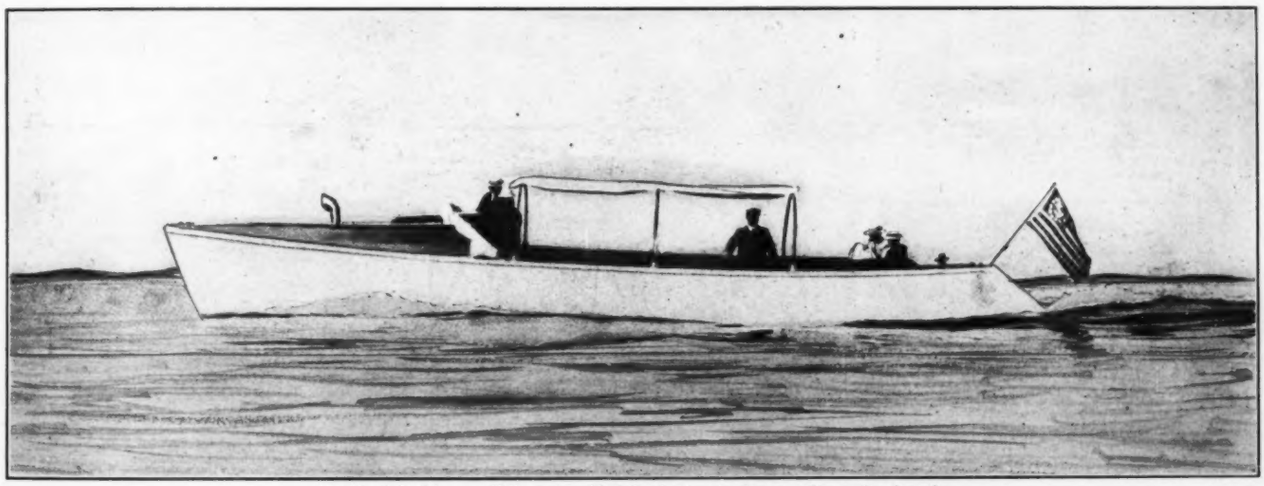
52 PINE STREET, NEW YORK CITY

TELEPHONE 4510 JOHN

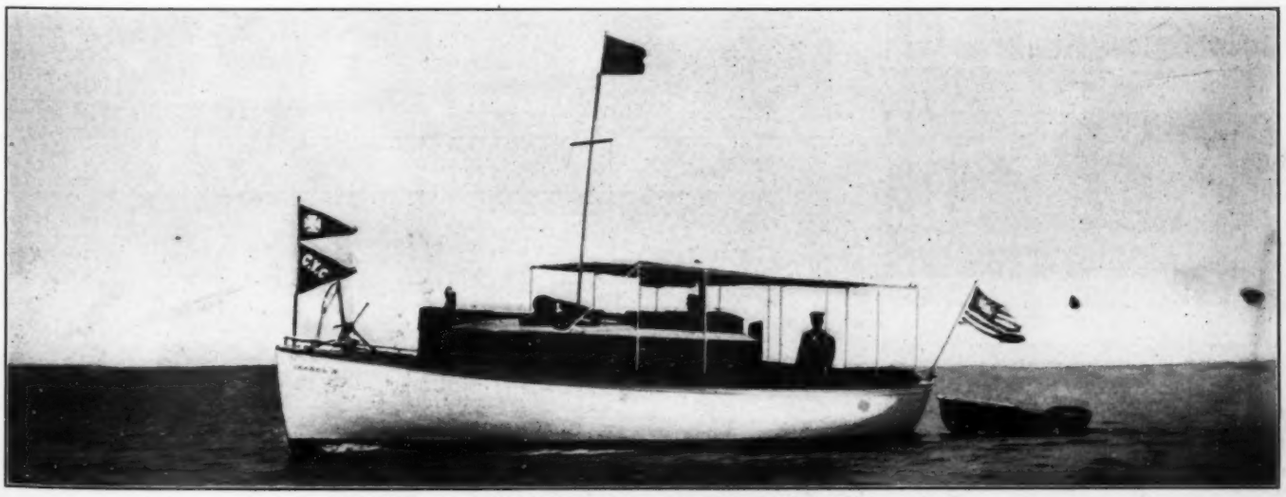
YACHT AND SHIP BROKERS. NAVAL ARCHITECTS AND MARINE ENGINEERS. MARINE INSURANCE

CORRESPONDENTS IN GREAT BRITAIN, MESSRS. G. L. WATSON & CO., GLASGOW

FOR SALE.—35 x 5 ft. 3 in. mahogany Speed Launch; new 1909; best possible condition. Owner building larger boat. 60 H.P. motor; speed, 22 miles.
Please mention MOTOR BOATING.



42 x 38 x 8 ft. 6 in.; 25 H.P. motor; ideal day boat or tender to racing yacht; bargain.
Please mention MOTOR BOATING.



FOR SALE.—37 x 8 ft. 6 in. Seabury Launch; complete outfit; condition perfect.
Please mention MOTOR BOATING.

Telephones:
Broad 4886
" 4887

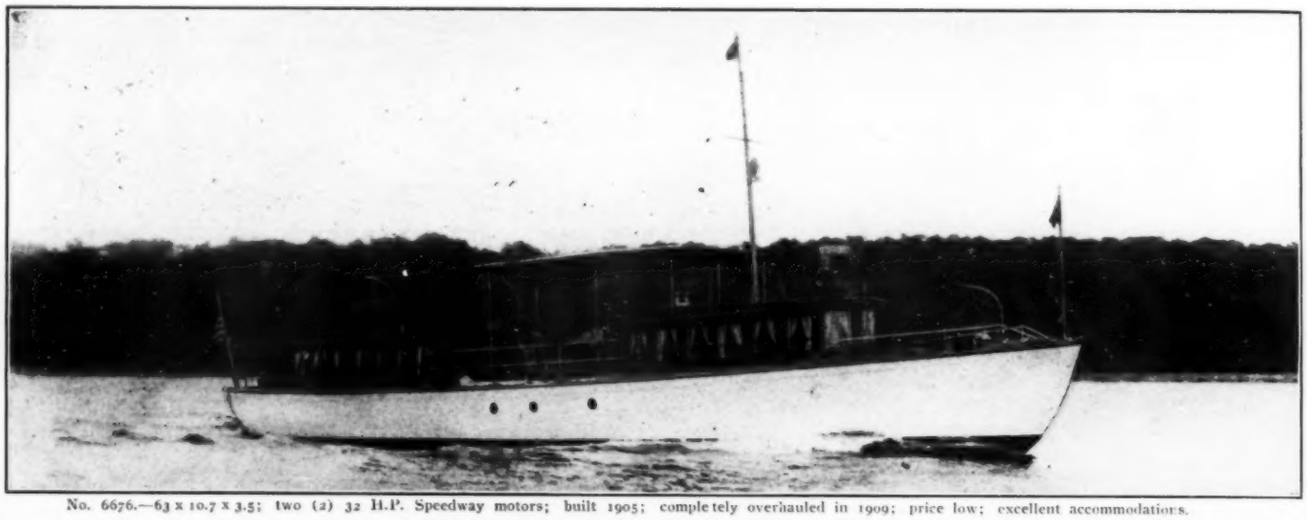
A. J. McINTOSH YACHT AGENCY

Cable Address,
"Planetical"

SPECIALIST IN GENERAL YACHT BUSINESS

32 BROADWAY - - - - NEW YORK CITY

If you want to *buy, charter* or *sell,* we offer our services. Highest grade boats of all types and sizes now on our For Sale List. *Write, call,* or *'phone.* —Consult us about your yachting requirements



No. 6676.—63 x 10.7 x 3.5; two (2) 32 H.P. Speedway motors; built 1905; completely overhauled in 1909; price low; excellent accommodations.

No. 216.—35 x 31 x 9 x 2.6; 12 H.P. Buffalo; built 1908; complete for cruising.

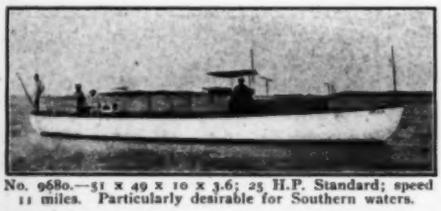
No. 7069.—57 x 51 x 12.6 x 4; 24 H.P. Buffalo; electric lights; fully equipped; built 1908.

Auxiliary sloop.—31 x 27.6 x 9.6 x 2.7; 7 H.P. Palmer motor; very comfortable; completely outfitted. Price extremely low.

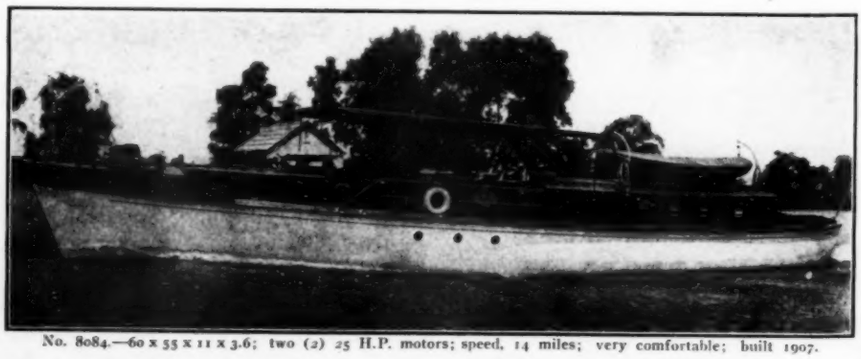
No. 484.—43 x 9.6 x 2.10; 16 H.P. Globe motor; excellent condition; unusual bargain.

No. 562.—45 x 9 x 2.2; 20 H.P. Sparks motor; speed, 10 miles; excellent boat for South; electric lights; fully equipped; price reasonable.

No. 9335.—65 x 63 x 12 x 34 in.; 25 H.P. 20th Century motor; fully equipped; electric lights; price exceedingly low.



No. 9680.—51 x 49 x 10 x 3.6; 25 H.P. Standard; speed 11 miles. Particularly desirable for Southern waters.



No. 8084.—60 x 55 x 11 x 3.6; two (2) 25 H.P. motors; speed, 14 miles; very comfortable; built 1907.

A. J. McINTOSH YACHT AGENCY

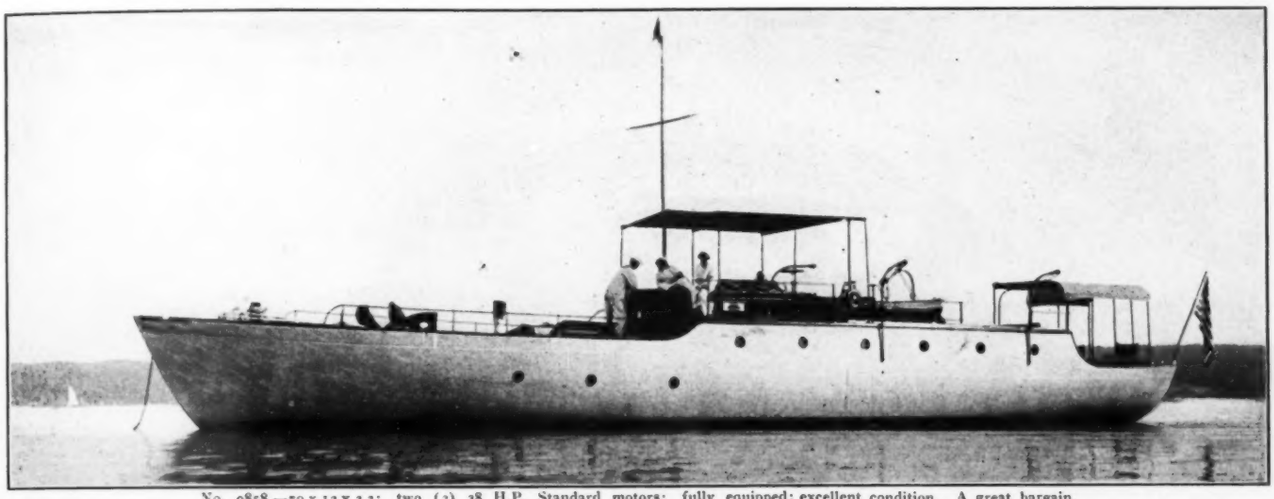
Telephones—
Broad 4886 - 4887

NEW YORK CITY

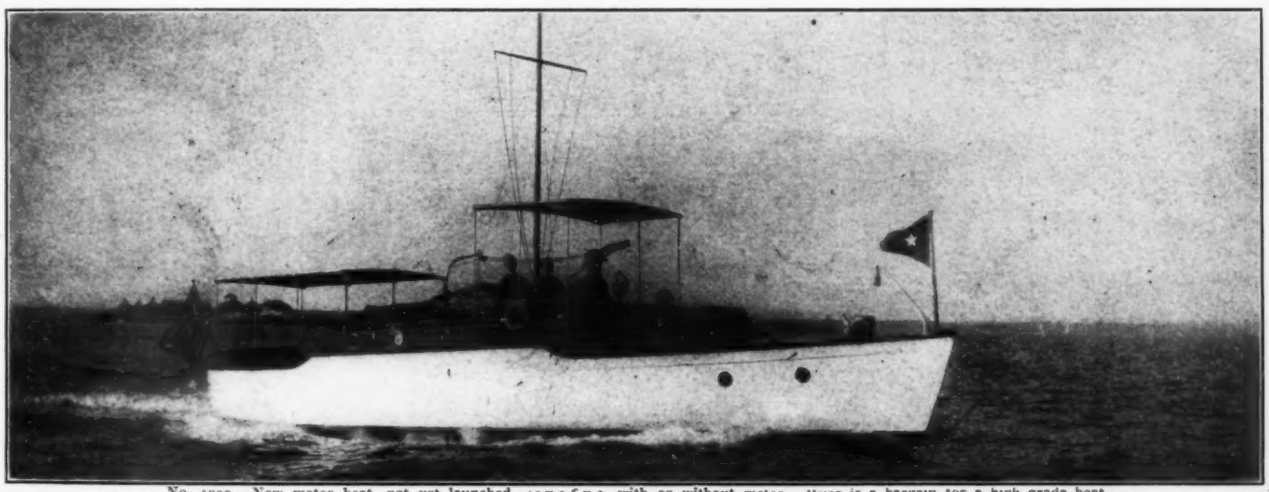
32 Broadway

**Highest Grade Yachts of All Types For Sale or Charter —
Motor Boats — Steam — Sailing Craft**

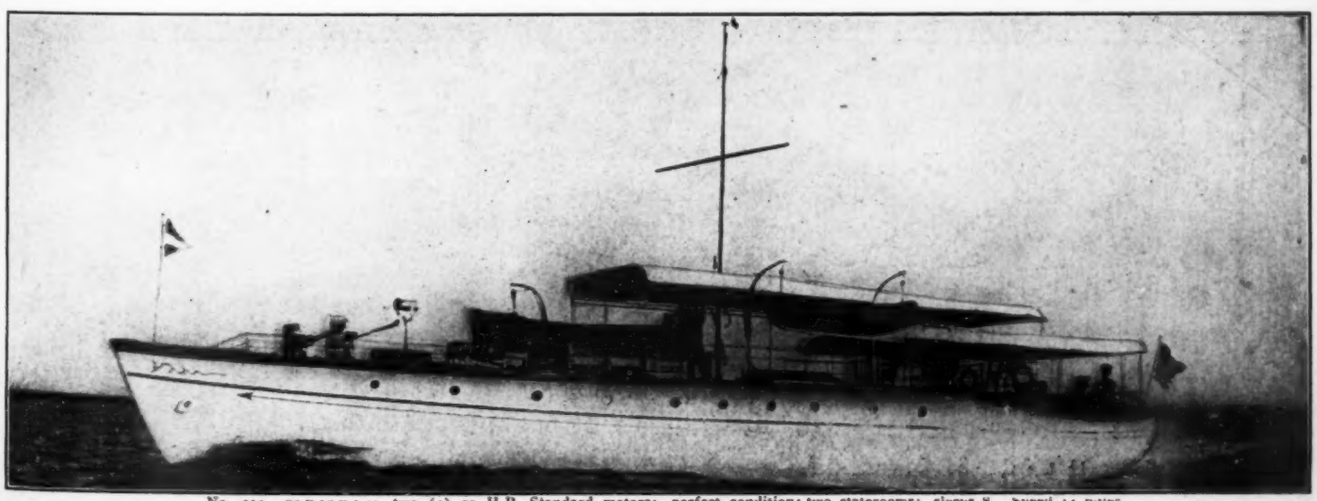
Correspondence Invited - - - - - - - - - - - - - - Descriptions Furnished



No. 9858.—70 x 12 x 3.3; two (2) 38 H.P. Standard motors; fully equipped; excellent condition. A great bargain.
Please mention MOTOR BOATING.



No. 1000.—New motor boat, not yet launched, 42 x 9.6 x 3, with or without motor. Price is a bargain for a high grade boat.
Please mention MOTOR BOATING.



No. 232.—75 x 15 x 3.4; two (2) 50 H.P. Standard motors; perfect condition; two staterooms; sleeps 8. Speed 14 miles.
Please mention MOTOR BOATING.

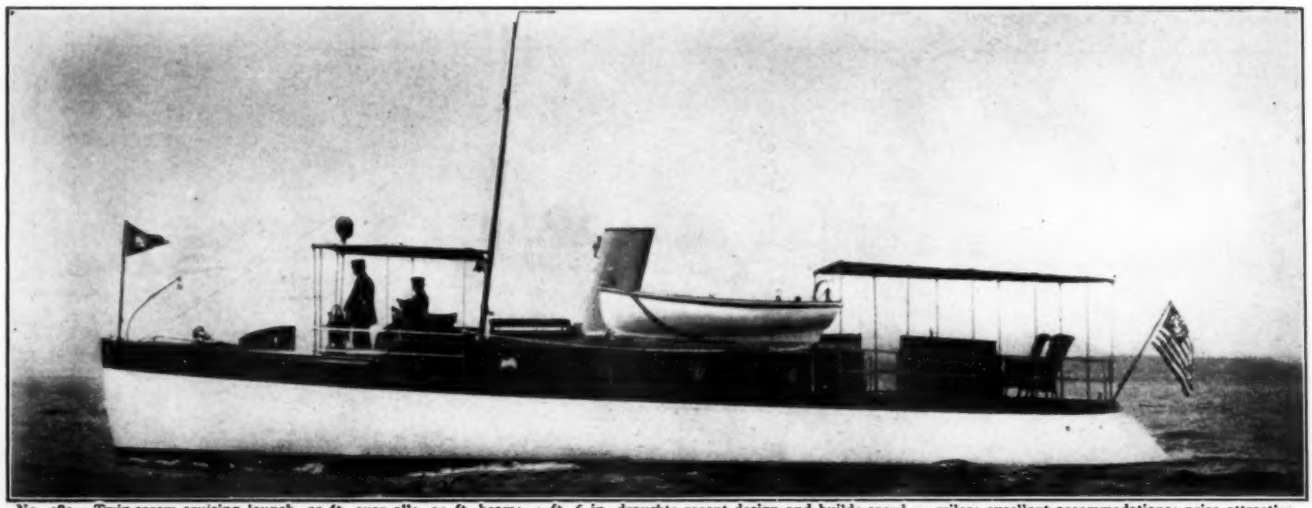
COX & STEVENS

15 William St., New York City

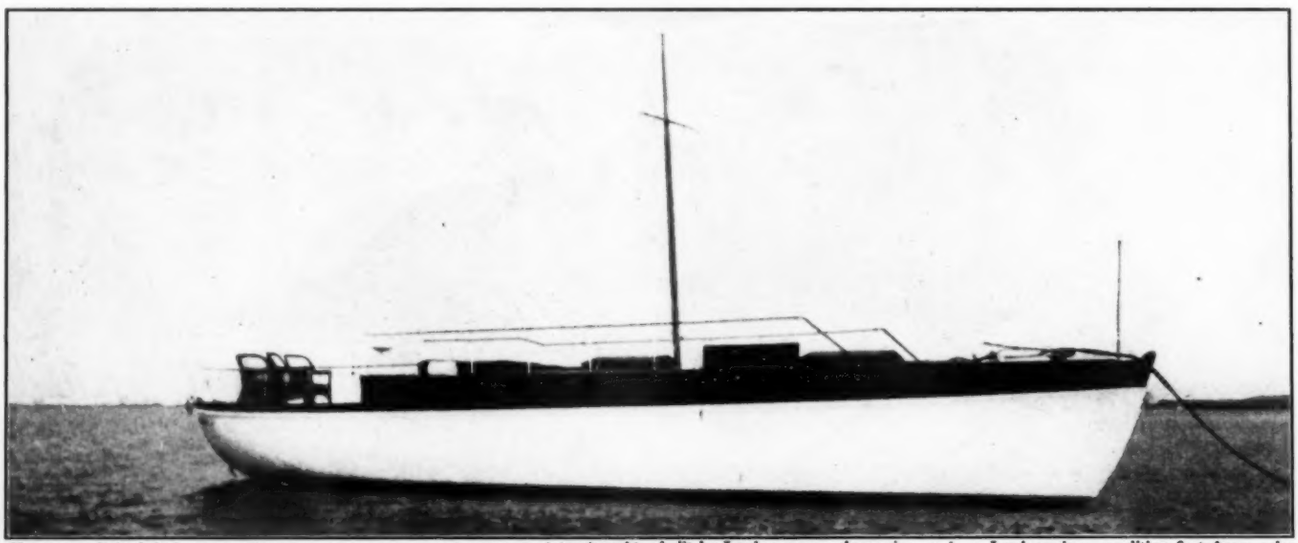
NAVAL ARCHITECTS, ENGINEERS, YACHT BROKERS

Offer first class yachts for purchase. Complete particulars, plans and photographs promptly submitted on receipt of inquiry. State your requirements. Large list of yachts of all types for sale or charter.

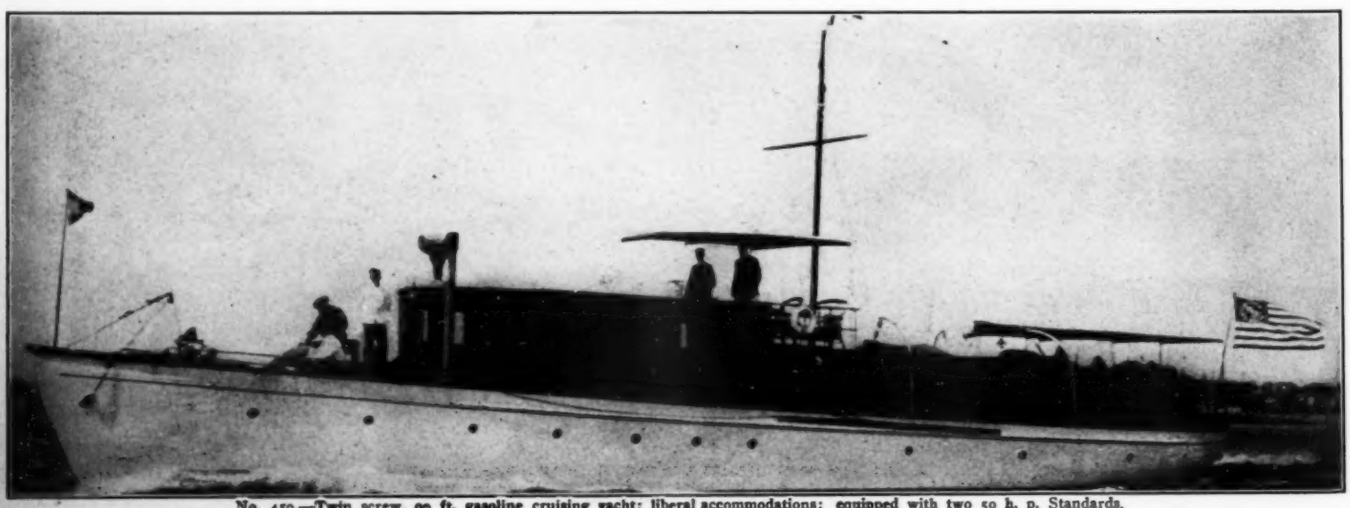
1375 Broad—TELEPHONES—5576 Broad



No. 383.—Twin-screw cruising launch, 55 ft. over all; 12 ft. beam; 3 ft. 6 in. draught; recent design and build; speed 12 miles; excellent accommodations; price attractive.
Please mention MOTOR BOATING.



No. 1200.—Raised deck cruising launch; 50 ft. o. a.; 10 ft. beam; 2 ft. 6 in. draught; built by Lawley, 1907; sleeps six; 24 h. p. Lamb engine; condition first-class; price attractive.
Please mention MOTOR BOATING.



No. 459.—Twin screw, 90 ft. gasoline cruising yacht; liberal accommodations; equipped with two 50 h. p. Standards.
Please mention MOTOR BOATING.

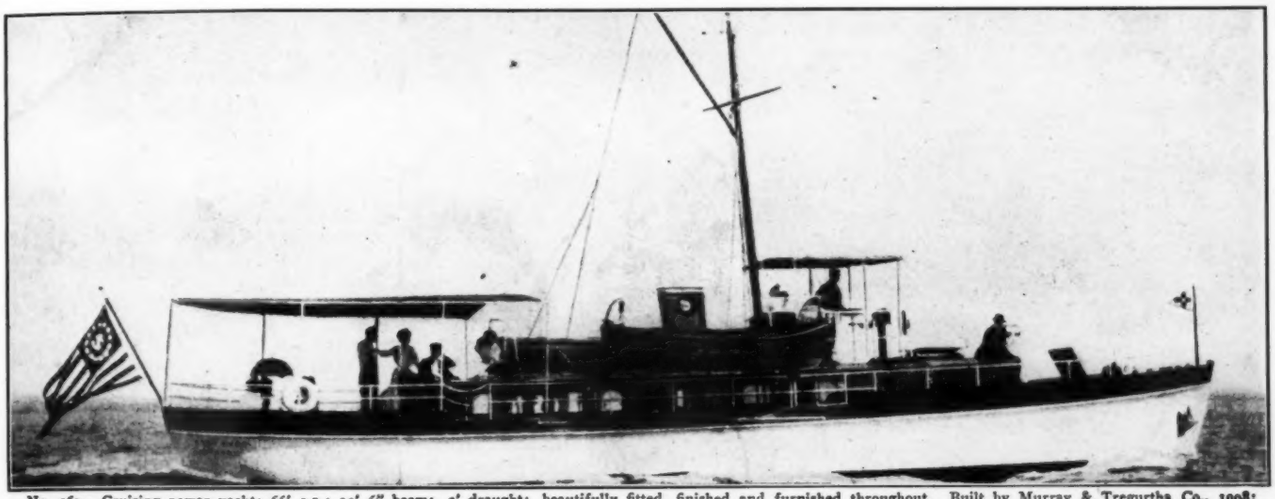
COX & STEVENS

15 William St., New York City

NAVAL ARCHITECTS, ENGINEERS, YACHT BROKERS

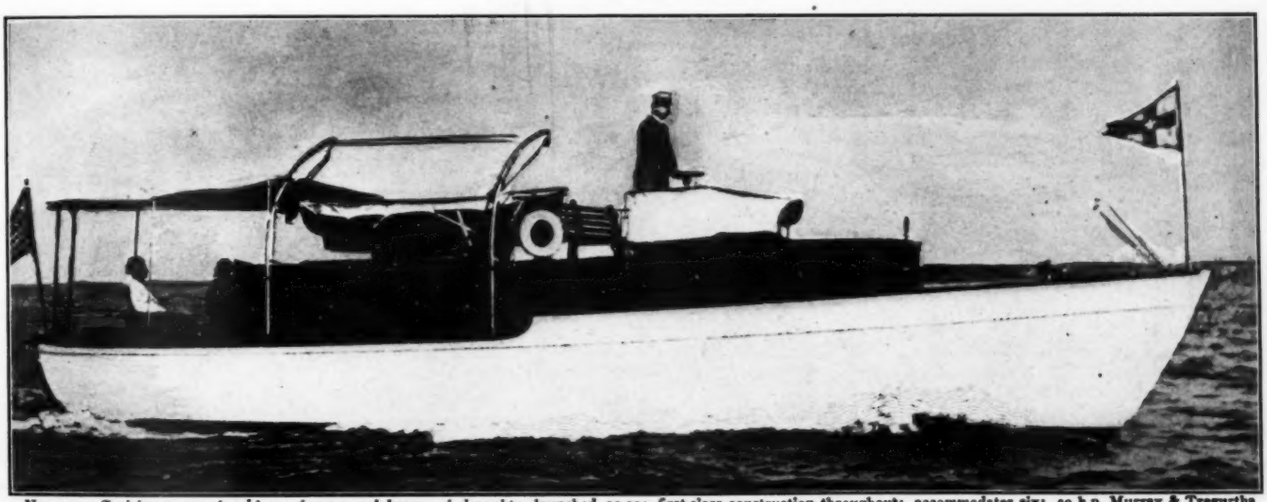
Offer first class yachts for purchase. Complete particulars, plans and photographs promptly submitted on receipt of inquiry.
State your requirements. Large list of yachts of all types for sale or charter.

1375 Broad — TELEPHONES — 5576 Broad



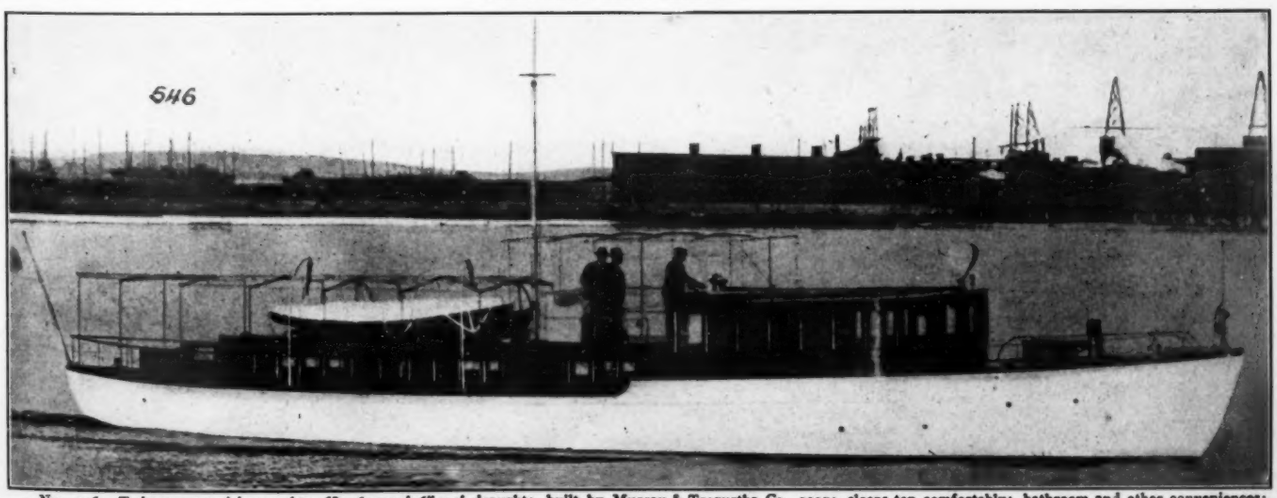
No. 567.—Cruising power yacht; 66′ o.a.; 12′ 6″ beam; 3′ draught; beautifully fitted, finished and furnished throughout. Built by Murray & Tregurtha Co., 1908; sleeps seven; 85 h.p. Murray & Tregurtha engine; speed 11 knots. All conveniences. Must be seen to be appreciated; price reasonable, in commission.

Please mention MOTOR BOATING.



No. 501.—Cruising power launch; 45′ o.a.; 10′ beam; 3′ draught; launched 1909; first-class construction throughout; accommodates six; 30 h.p. Murray & Tregurtha engine; speed 10 miles; price attractive.

Please mention MOTOR BOATING.



No. 546.—Twin-screw cruising yacht; 68 x 62 x 12′ 6″ x 4′ draught; built by Murray & Tregurtha Co., 1907; sleeps ten comfortably; bathroom and other conveniences; two 60 h.p. Murray & Tregurtha engines; speed 13 miles. Price attractive.

Please mention MOTOR BOATING.

NAVAL ARCHITECTS AND ENGINEERS

WHITTELSEY & WHITTELSEY

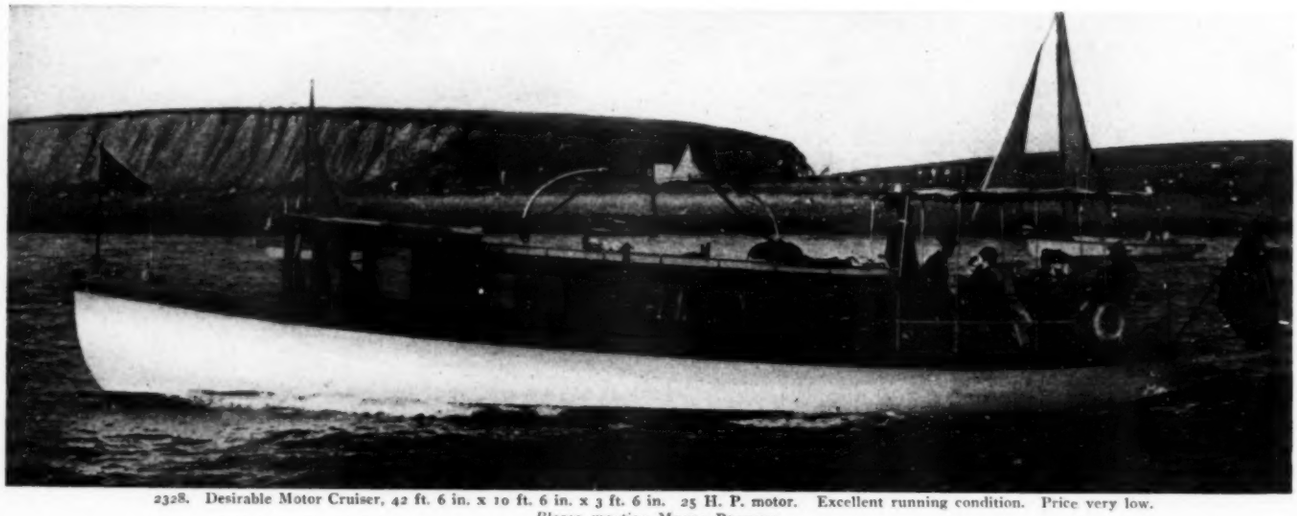
YACHT BROKERS

11 Broadway, New York
Telephone 4718 Rector

Complete designs and specifications furnished for all types of cruising or high-speed steam or gasoline propelled yachts. Preliminary sketches and estimates promptly furnished upon request.

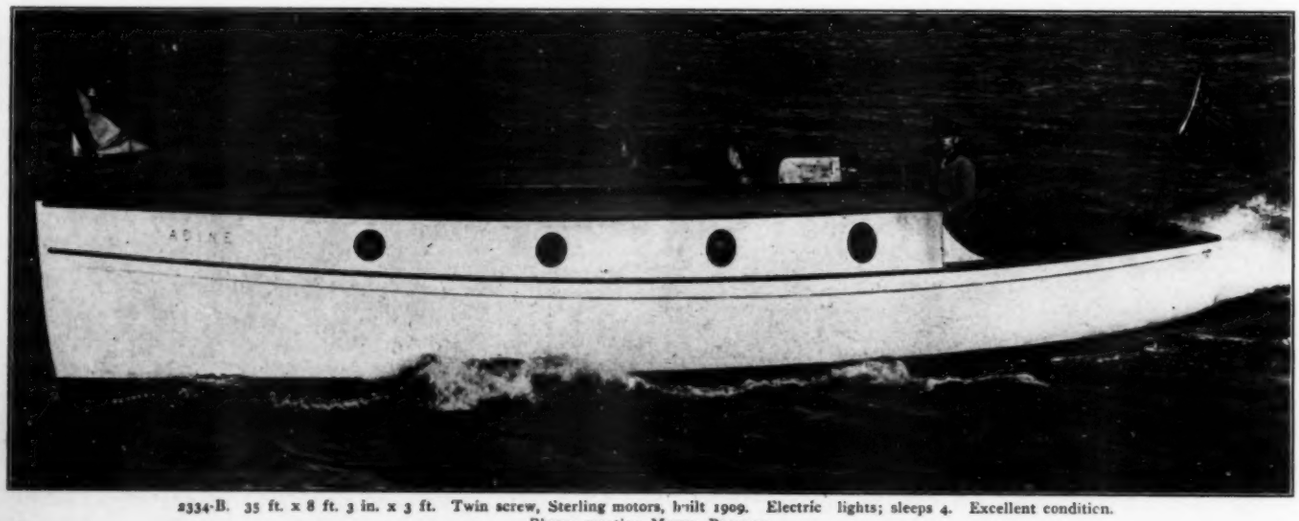
Through our brokerage department we offer a complete list of the best available steam and motor yachts on the market. Complete descriptions, plans and photographs promptly submitted.

LET US KNOW YOUR REQUIREMENTS



2328. Desirable Motor Cruiser, 42 ft. 6 in. x 10 ft. 6 in. x 3 ft. 6 in. 25 H. P. motor. Excellent running condition. Price very low.
Please mention MOTOR BOATING.

2589. Roomy Cruiser, 54 ft. x 12 ft. x 3 ft. 6 in. Standard motor, 25 H. P. Sleeps 6.
Please mention MOTOR BOATING.



2334-B. 35 ft. x 8 ft. 3 in. x 3 ft. Twin screw, Sterling motors, built 1909. Electric lights; sleeps 4. Excellent condition.
Please mention MOTOR BOATING.

NAVAL ARCHITECTS AND ENGINEERS

WHITTELSEY & WHITTELSEY

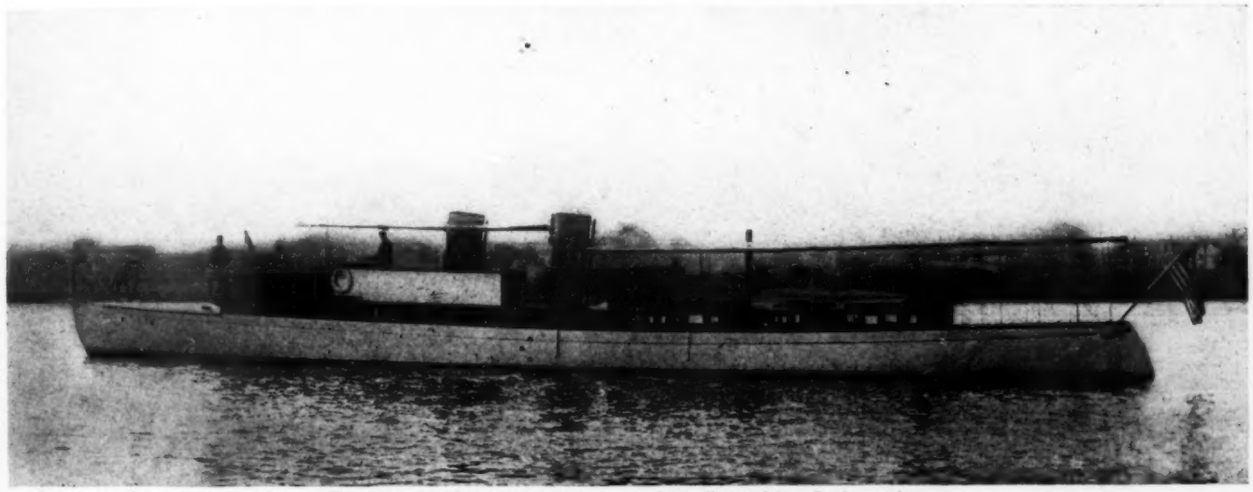
YACHT BROKERS

11 Broadway, New York
Telephone 4718 Rector

Complete designs and specifications furnished for all types of cruising or high-speed steam or gasoline propelled yachts. Preliminary sketches and estimates promptly furnished upon request.

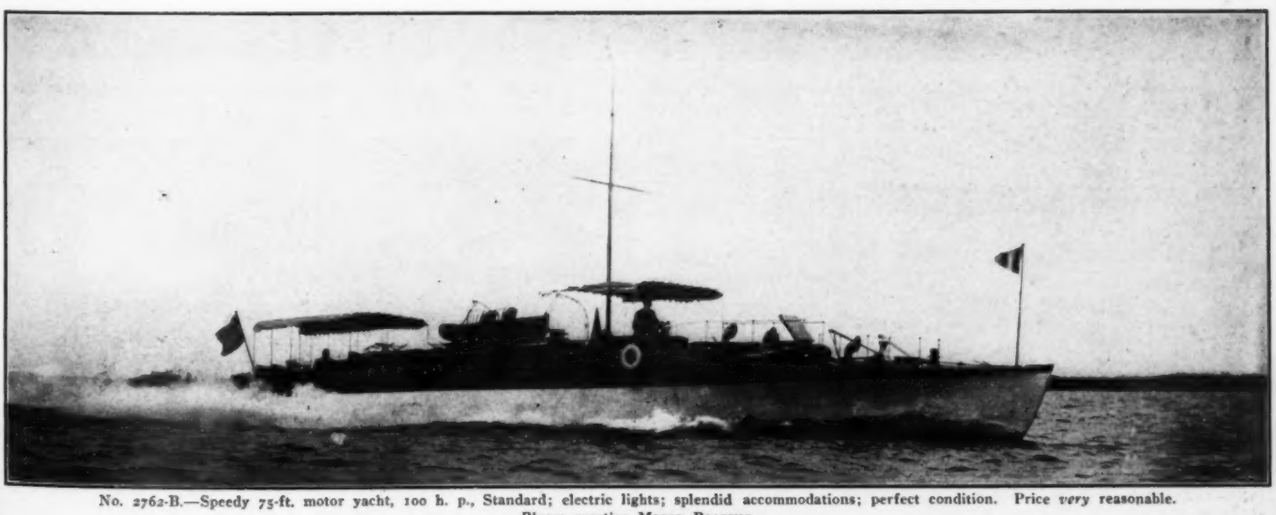
Through our brokerage department we offer a complete list of the best available steam and motor yachts on the market. Complete descriptions, plans and photographs promptly submitted.

LET US KNOW YOUR REQUIREMENTS



No. 2807.—Sacrifice steam yacht, 94 x 11 feet. Sleeps eight. Lawley engines.
Please mention MOTOR BOATING.

No. 2799-B.—Twin screw cruiser, 75 x 15 feet; two 50 h. p. Standard motors; perfect condition; two staterooms; sleeps eight.
Please mention MOTOR BOATING.



No. 2762-B.—Speedy 75-ft. motor yacht, 100 h. p., Standard; electric lights; splendid accommodations; perfect condition. Price *very* reasonable.
Please mention MOTOR BOATING.

FRANK BOWNE JONES, *Yacht Agent*

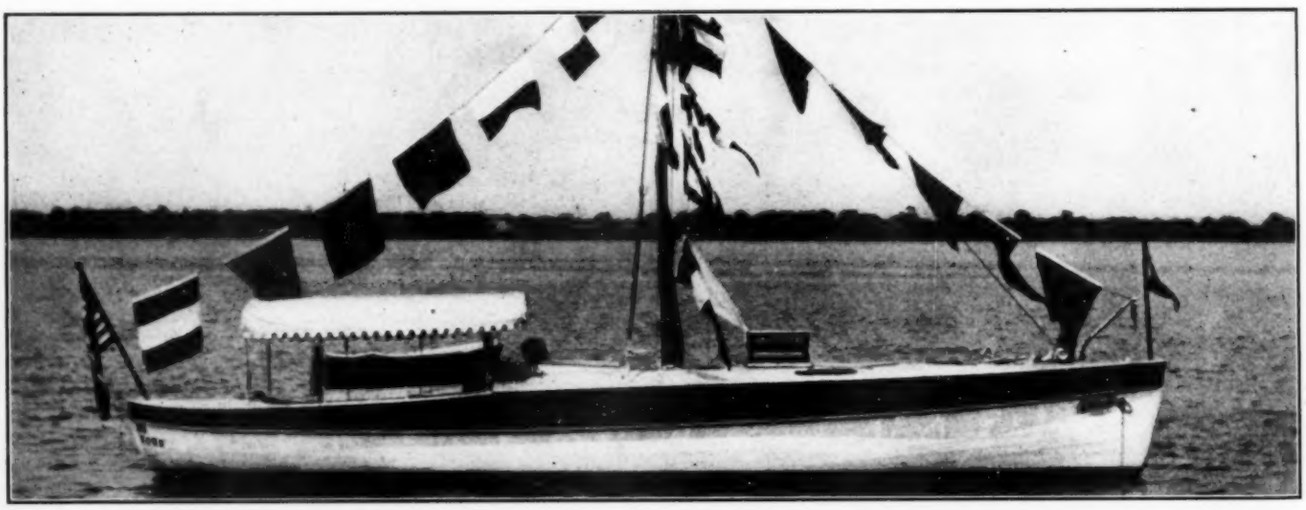
High Class Yachts of All Types for Sale and Charter

Descriptions on Request. Marine Insurance at Special Rates

MORGAN BARNEY, *Naval Architect*

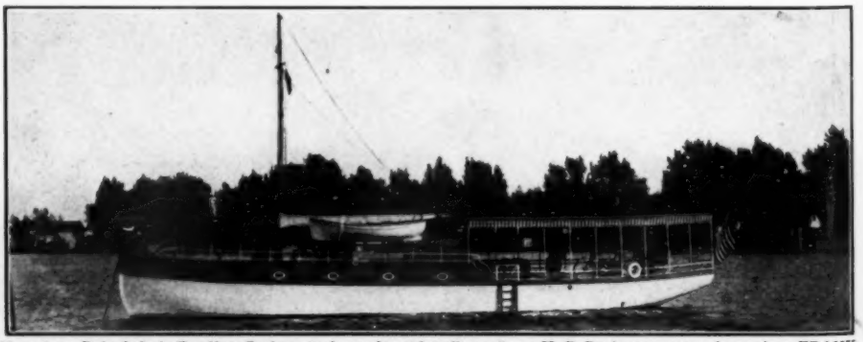
29 BROADWAY, NEW YORK
Telephone, Rector 3099

No. 2634. Gasoline Cruiser, built 1904; 65 feet by 12½ feet by 4 feet; 50-65 H. P. Standard motor. FRANK BOWNE JONES, Yacht Agent, 29 Broadway, New York.
Please mention MOTOR BOATING.



No. 4895. Raised deck Gasoline Cruiser, built 1909; 42 feet by 9 feet by 4 feet; Standard motor. FRANK BOWNE JONES, Yacht Agent, 29 Broadway, New York.
Please mention MOTOR BOATING.

No. 4756. Trunk Cabin Launch, built 1908; 28 feet by 7 feet by 2½ feet; 9 H. P., 2-cylinder Stanley motor. FRANK BOWNE JONES, Yacht Agent, 29 Broadway, New York.



No. 4805. Raised deck Gasoline Cruiser, 60 by 11 by 3½, built 1908; 32 H. P. Rochester motor; low price. FRANK BOWNE JONES, Yacht Agent, 29 Broadway, New York.
Please mention MOTOR BOATING.

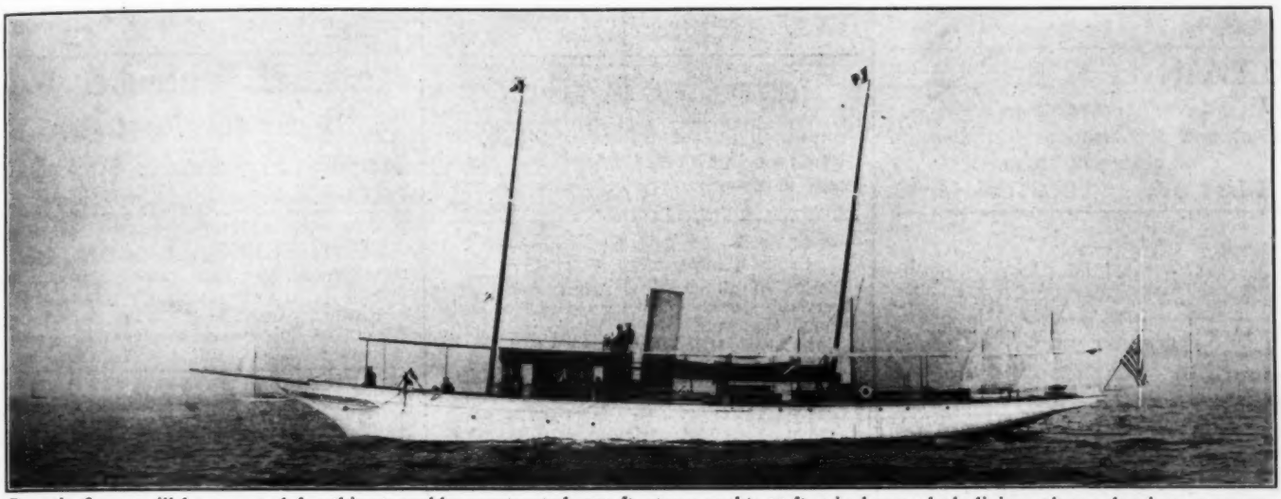
Careful inspections made of all boats before sold.

WILLIAM GARDNER

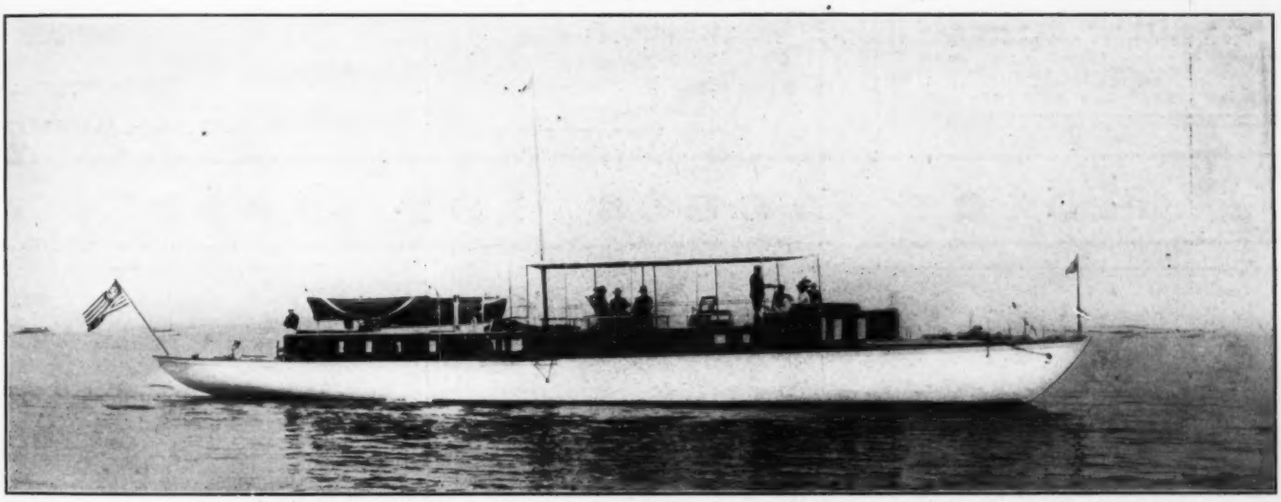
Large list of all the desirable Yachts for sale and charter.

YACHT BROKER, NAVAL ARCHITECT AND ENGINEER

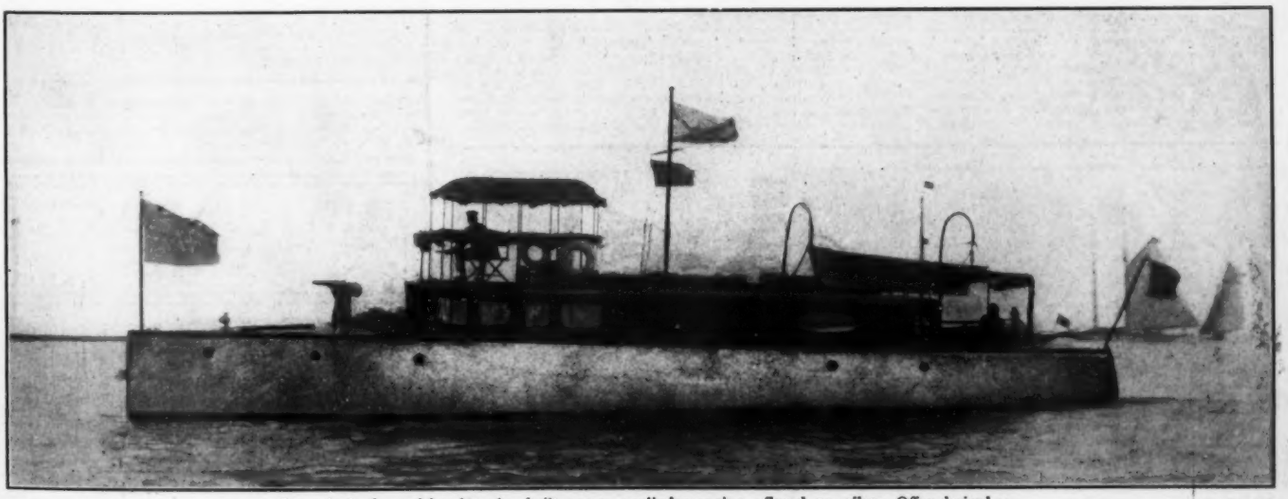
Telephone No. 2160 Rector Kindly advise your requirements. No. 1 Broadway, New York



Bargain figure will be accepted for this staunchly constructed, 110 ft. steam yacht; 15 ft. 4 in. beam; deck dining saloon; sleeping accommodations for nine in owner's party; toilet room, galley, etc.; speed, 14 miles; electric lights and full inventory. No outlay of money required for repairs or outfit. Inspection invited.
Please mention MOTOR BOATING.



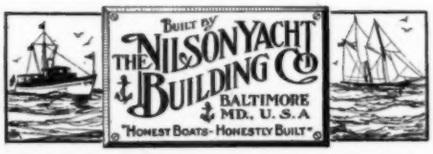
Able and roomy 90 ft. twin-screw launch, recently built under my supervision by first-class builders; two 60 H.P. Craig engines. Low figure.
Please mention MOTOR BOATING.



Staunch 60 ft. cruising launch; built 1907; 4-cylinder engine. Speed, 14 miles. Offer desired.
Please mention MOTOR BOATING.

NAVAL ARCHITECTS & YACHT BROKERS

THEODORE D. WELLS
Naval Architect and Marine Engineer
32 Broadway, New York Tel. Broad 6787
A Specialty of Steam Yachts, Power Boats and Sailing Yachts.
Successor to H. C. WINTRINGHAM and WINTRINGHAM AND WELLS.

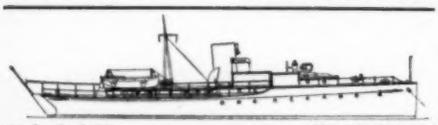


GIELOW & ORR
Naval Architects, Engineers and Brokers
Marine Insurance
52 BROADWAY, NEW YORK, N. Y.
Telephone 4673 Broad
Plans, Specifications and Estimates furnished for all requirements. Description and Photos submitted upon receipt of inquiry.

NORMAN L. SKENE, S. B.
Naval Architect
Designs and specifications furnished for all classes of yachts.
14 KILBY ST., BOSTON, MASS.

FREDERIC S. NOCK
NAVAL ARCHITECT AND YACHT BUILDER
MARINE RAILWAYS, STORAGE, REPAIRS
EAST GREENWICH RHODE ISLAND

Morris M. Whitaker, N. A.
Motor Boat Specialist
Metropolitan Life Tower, New York City
Sketches submitted on receipt of your requirements.



Tel. Lombard 2289 Cable Add. "Murwat"
BOWES & WATTS
Naval Architects and Engineers Yacht and Vessel Brokers
Offices: 907-908 BROWN BROS. BUILDING
399 CHESTNUT STREET PHILADELPHIA

R. M. HADDOCK
NAVAL ARCHITECT
Yachts of all classes designed, construction supervised, special attention to design of cruising and High-speed Power Yachts.
Tel. 445-W. 28 Clinton Place
NEW ROCHELLE, N. Y.

NEW YORK JERSEY CITY BAYONNE
BRUNS KIMBALL & CO., Inc.
126 Liberty St., New York Phone 3218 Cortlandt
THE LARGEST and MOST RELIABLE MARINE AGENTS and YACHT BROKERS
Send for bargain list of first-class second hand engines or boats
Engine Installing : : Yacht Repairing

WHITTELSEY & WHITTELSEY
Naval Architects and Marine Engineers
Specialists in the designing and superintending of the construction of steam and power propelled vessels.
11 Broadway, New York. Phone 4718 Rector

CHARLES D. MOWER
Designs Furnished for Racing Cruising and Power Yachts of all types
NAVAL ARCHITECT
29 Broadway
Tel. 3813 Rector NEW YORK CITY

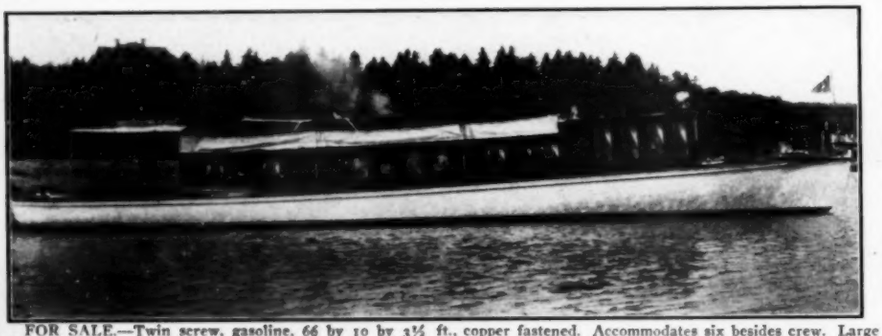
CARY SMITH & FERRIS
NAVAL ARCHITECTS AND ENGINEERS
Steamships, Steamboats, Lighters, Tugboats, Barges, Pilot Boats, Yachts, steam and sail, and Motorboats like Atlas Craig.
90 WALL STREET - - NEW YORK CITY

COX & STEVENS
Engineers, Naval Architects, Yacht Brokers
15 WILLIAM STREET NEW YORK CITY
Telephone 1375 Broad

"Great Oaks from little acorns grow"

Little Ads grow into big business —eventually.

Motor Boats for Sale

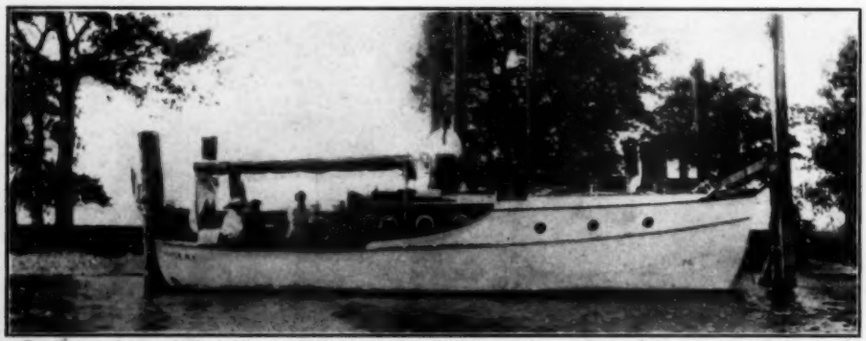


FOR SALE.—Twin screw, gasoline, 66 by 10 by 3½ ft., copper fastened. Accommodates six besides crew. Large lockers, two toilets, two wash bowls. Headroom, 6½ ft. Acetylene lighted. Two independent 4-cylinder Standard engines, 25 H. P. each. Maximum speed, 12 knots. Tanks, copper; 480 gals. gasoline; 100 gals. water. Cruising radius, 1,000 miles. Launch, dinghy. Steers from bridge and from pilot house. Berths have wire spring mattresses. Screens and shades for windows. Complete cruising inventory. Machinery and shaft bearings just renovated. Total fuel consumption, only 4 gals. per hour at 8½ knots. Yacht is in perfect condition, no repairs necessary. Has cruised from New York to Cape Breton Island. George E. Hills, 33 Broad St., Boston, Mass.

FOR SALE.—BARGAIN.—23 ft. Launch, Palmer engine, 5½ h.p. reverse gear, magneto, full equipment; used four months; cost $550; will sell for $350. Further particulars, address W. A. Euhaus, 412 E. 21st St., Brooklyn, N. Y.

FOR SALE—Two brand new 1910 model marine engines; 2 cylinder, 4 cycle, 5½x6, Vulcan 15-20 H.P.; also 7 H.P. single cylinder, 2 cycle Peerless, 4¾x5. These are medium speed motors, never uncrated from the factory. $225 and $125 respectively. N. B. Smithers, 518 13th Street, Washington, D. C.

FOR SALE.—Four-cylinder, 5x6, Palmer Engine. Complete outfit, except shaft. With independent oiling system. In perfect condition and guaranteed. Price, $250. T. V. Roe, Tarrytown, N. Y.



Gasoline cruiser, 32'x8'x2' 8". 12 H.P. heavy duty Buffalo. Cedar planked, copper riveted. Forward cabin, white and mahogany; aft, mahogany. Trim seaworthy boat, completely found for cruising. Price low. Inspection. H. P. Wood, 60 Wall street, New York City.

MOTOR BOATS WANTED

The rate for "Want" advertisements is 3 cents per word.

EXCHANGE.—70 H.P. Thomas Flyer Runabout Automobile, 1907 model, in good condition, to exchange for Trunk Cabin Cruiser, 30 to 40 ft., with good motor. Address Stephen P. Perkins, 148 Sylvan Ave., New Haven, Conn.

WANTED—4-cylinder, 2-cycle, 35 to 45 H. P., high-speed, light-weight marine motor, including reverse gear; give full particulars and price. Address E. D. Huebner, Watervliet, Mich.

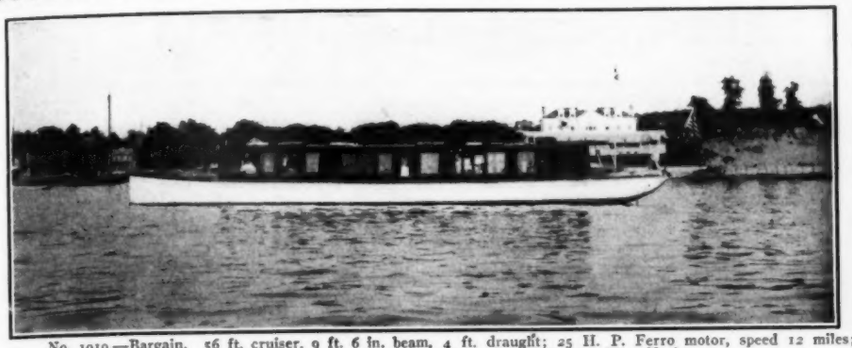
THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 3 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:

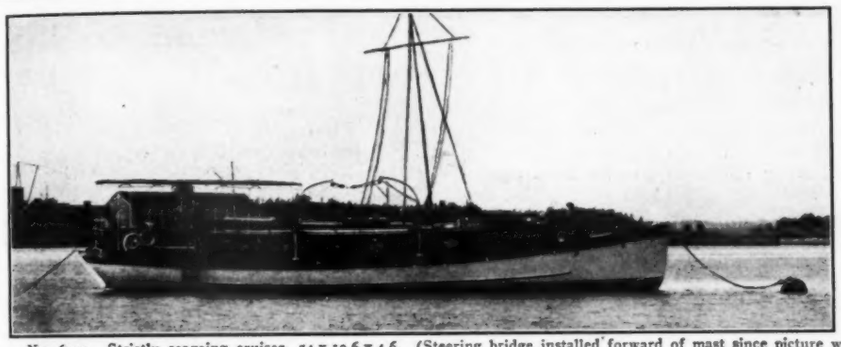
Cut one inch deep, one column wide..... $2
Cut two inches deep, two columns wide..... $3
Cut three inches deep, three columns wide..... $4

Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MOTOR BOATING.

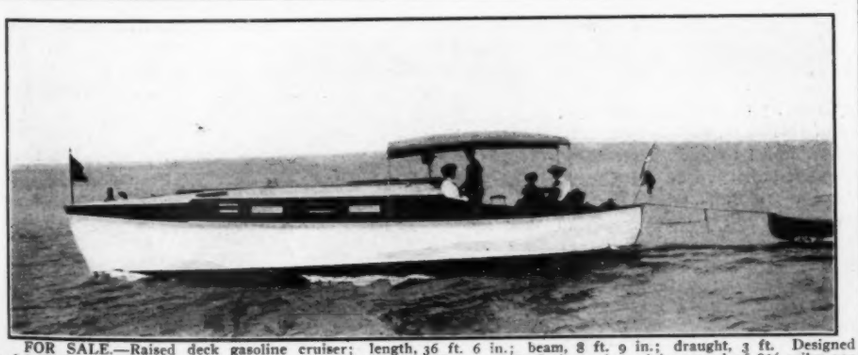


No. 1010.—Bargain. 56 ft. cruiser, 9 ft. 6 in. beam, 4 ft. draught; 25 H. P. Ferro motor, speed 12 miles; sleeps eight; fully equipped, perfect condition. William P. Kiggins, 45 Broadway, New York.

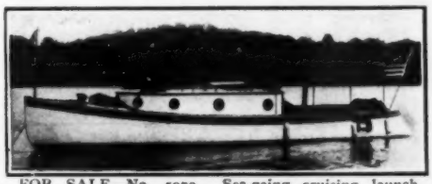


No. 6021. Strictly seagoing cruiser, 54 x 10.6 x 4.6. (Steering bridge installed forward of mast since picture was taken.) 50 Standard engine; 11 miles; beautiful mahogany interior; sleeps eight; absolutely perfect; good as new; cost $10,000; asking $5,000. Address Stanley M. Seaman, 220 Broadway, New York.

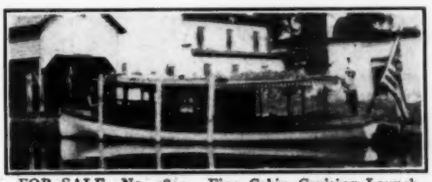
FOR SALE—28 ft. x 8 ft. x 2½ ft., decks and cabin trunk, coaming, etc., solid mahogany. 8 H. P. 2-cyl., 4-cycle Palmer motor, new 1909. Boat built, 1907, by N. Y. Kerosene Eng. Co. Equipment from A to Z. Price, $800. Wagner Bros., 774 Jackson Ave., Bronx. (Tel. 1555 W. Melrose.)



FOR SALE.—Raised deck gasoline cruiser; length, 36 ft. 6 in.; beam, 8 ft. 9 in.; draught, 3 ft. Designed and built by R. Wallin's Sons, Brooklyn, N. Y., in 1908. Has 10 H.P. Craig engine, giving speed of 8¾ miles per hour; large fuel and water tanks. It is easily controlled by one man. Sleeping accommodations for four in two separate cabins. Full head room throughout. Toilet, lavatory, stove and ice box. Interior finish the very best. Exceptionally full inventory, including wicker chairs, large searchlight, pneumatic cushions, life preservers, round bottom tender, etc. Boat's record: In 1908 was second in Marblehead race; first in Block Island race; first in Fire Island Light race. Cash price, $2,500. Boat is now at Patchogue, Long Island. For further particulars address S. H. Gillespie, 6-8 Fletcher street, New York.



FOR SALE—No. 5979. Sea-going cruising launch, built, 1906. 35 ft. o. a., 6.6 ft. beam, 3 ft. draught. Oak cabin provides two comfortable berths; toilet; galley; electric lighted. 13 H. P. Knox; speed, 8½ miles. Complete inventory, mostly renewed 1909. Owner's change of residence necessitates immediate sale—any reasonable proposition entertained. Address Stanley M. Seaman, 220 Broadway, New York.



FOR SALE—No. 5834. Fine Cabin Cruising Launch, built 1906. 34.6 o. a., 7 ft. beam, 2.9 ft. draught. 16-foot Cabin provides four sleeping berths; toilet; galley; 5.11 ft. headroom. 20 H. P. Fairbanks, installed 1907; speed, 10 miles. Am very anxious to sell—will sacrifice. Address my agent, Stanley M. Seaman, 220 Broadway, New York.

FOR SALE—No. 6014, High Grade, able Seabury Launch, built 1907. 25 ft. o. a., 6 ft. beam, 27 inches draught; 8 H. P. 4-cycle Speedway motor, installed 1907; speed 8 miles; reversing clutch. Usable for cruising purposes. In A-1 condition. Low price. Address my agent, Stanley M. Seaman, 220 Broadway, New York.

For Sale: **Drawings, Patterns and Parts for a Good Three and Four Cylinder Four Cycle Marine Motor. Also suitable for other Heavy Duty Work. Cylinders 5¼ Bore, 5 in. Stroke. Valve-in-Head Type. Excellent Opportunity to start in building a Motor Business for yourself.**

Address, D. P. J., Care Motor Boating.

FOR SALE—No. 2874—Standing top launch, 29 x 6.6 ft.; whaleboat model; finished in mahogany; oak frames, 1⅛-inch cedar planking; copper fastened; 8 H. P. 2-cylinder Murray & Tregurtha motor, slightly used; speed 8 knots; boat has been used very little; two brass steering wheels; price $950. Inspectable at Lawley's Yard, South Boston. For permit apply to Gielow & Orr, 52 Broadway, New York.

BARGAIN—No. 2434—Crosby seagoing auxiliary cat-boat, 40 x 32.6 x 15.3 x 3.6; has been to Florida twice; accommodates six comfortably besides crew; two toilets; 15 H. P. Murray & Tregurtha motor; speed about 7 miles; completely equipped. Apply to Gielow & Orr, 52 Broadway, New York.

MANUFACTURER'S AGENT—Capable, efficient, by largest concern of its kind in the country. Exclusive territory and liberal commissions to the right men. References required. Address Blackiston, Wabash Bldg., Pittsburgh, Pa.

FOR SALE—Houseboat in Florida. Sleeps four people. Engineroom, toilet, galley and forward cabin; strongly built. A roomy boat for three or four people. Price $400. W. T. Heddon, Dowagiac, Mich.

FOR SALE—New 33-foot open power launch; 6 cylinders, 24 H. P., 2-cycle engines; cedar siding, mahogany finish; grated floors; gather cushions. Severe Dorion, 136 So. Salina Street, Syracuse, N. Y.

FOR SALE.—22 x 5 ft. 9 in. Knox Yawl-Dory with spray hood; fine sea boat, perfect condition; built 1909; makes 7½ miles; want larger boat reason for selling. R. H. Rogers, Chestertown, Md. Box 56.

SACRIFICE—No. 2806—Fast half-cabin launch, 45 x 7 ft., suitable for passenger service; speed 12 to 14 miles; 25 H. P. Fairbanks motor, new 1909. Details from Gielow & Orr, 52 Broadway, New York.

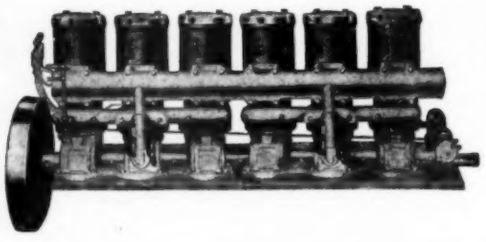
FOR SALE—New 30-ft. Launch and 38-ft. Auxiliary Yawl. Miller's Ship Yard, Patchogue, New York.

$1000 CHALLENGE RACE!

GENTLEMEN, WE ACCEPT YOUR CHALLENGE

TO THE PUBLIC

IN JUSTICE TO OURSELVES, AS WELL AS TO OUR CUSTOMERS.



A CHALLENGE

WHICH WE HAVE ACCEPTED MEANS MUCH TO YOU!!

THE GENERAL MACHINERY COMPANY, MAKERS OF THE SMALLEY ENGINE, HAVE ISSUED A CHALLENGE TO THIS EFFECT:

That they "can drive **any** boat, **any** distance, **faster** with the Smalley engine than the same hull can be driven by **any other engine** of equal size. Also that no **engine** of the same, or approximately the same size, can **equal** the brake horsepower test that can be made by the Smalley, and are ready at all times or place to demonstrate either of these statements."

Business etiquette, and a certain **sense** of modesty has prompted us, up to the present time, to refrain from accepting this challenge. Now the DIRECTORS of this corporation have instructed the management to respond both to this defi and to the urgent and repeated requests of our many friends and patrons whose faith in the **"SYRACUSE"** is so well established and deservedly so, to do what **no other manufacturer has dared** to do.

OUR SINCERITY

Accordingly, we have deposited with The City Bank at Syracuse, N. Y., the sum of **$500**—same to be covered by the General Machinery Company by an equal amount on or before February 25th, 1910—and that the total amount of $1000 be awarded to the winner of a **race** to be held on Onondaga Lake, N. Y., during the month of August, 1910.

This wager on our part is to strengthen our statements before the public, prove our good faith, and show by this as no other method can, that we **mean business** and are sincere. The element of what is termed "BLUFF" is not a composite of our make-up, and unless such an amount is put up it would be an easy matter to "Crawfish." In plain English, we have on deposit this amount of **$500** for the sole purpose of our own defense. It would be the height of folly, unfair to our customers and unjust to ourselves, to permit this challenge to remain unanswered any longer, without sacrificing to a degree the high standing we enjoy with the Motor Public, and since **no other manufacturer has the nerve to accept—WE DO.** The terms and conditions are in all fairness to both, and are stated below only with that intention.

TERMS AND CONDITIONS

We will furnish a hull, suitable for a Six (6) cylinder, 5¼" x 5¼" bore, and stroke, and they are to install their engine of this size in this hull and run over a measured course of **one hundred miles** and the time taken by three judges. After this trial by them, the hull is to be turned over to us at once with the "Smalley" engine taken out, and we will install our **"SYRACUSE"** of the same size, within one week and run over the same course. If we fail to equal the time made by them we forfeit the **$500. On the other hand, should we make the run in the same time or better, they are to forfeit their deposit of $500 to us.** Or, we will agree to **equal** or **better** the BRAKE HORSE POWER TEST of this same engine as indicated above, of same size Six (6) cylinder 5½" x 5½", on our test stand, for the same stake.

JUDGES

In both cases a committee selected from the local Chamber of Commerce or University, to act as judges, and their decision to be final. If the Brake Test is preferred, the Maximum test shall be that which is effected within 60 minutes of first trial. In other words, the time limit of each competitor is to be ONE HOUR. We have no preference, as we accept BOTH of their challenges and gladly submit to their decision as to either trial and test.

It is further understood that the measurement of cylinders of each competitor is to be made after each trial, and if the cylinders of either contestant are found by the judges to be oversize—the following penalties shall be paid to the opponent as follows: If .003 to .004 inch oversize, $100 forfeit; if .004 to .006 inch oversize, $250 forfeit; if .007 inch or over, the offending contestant shall forfeit entire deposit of $500 and be declared by the judges as defeated.

ABOUT FUEL

The grade of gasoline shall be the regular 68 degree or 72 degree as furnished by the Standard Oil Co., and both contestants shall draw their fuel from the same source of supply. If Picric acid or any other ingredient is mixed with the gasoline to increase the power by either contestant, that contestant using same shall be disqualified and lose the forfeit and contest. All fuel shall be tested by the judges.

We will be ready at date specified for either test, but this acceptance MUST be answered within 30 days from January 25, 1910. We believe the result will prove beyond all question the Wonderful Power, SPEED, DURABILITY, AND STRENGTH of the **"SYRACUSE MOTOR."** It is UP TO THEM to cover the deposit and prove to the MOTOR BOAT World that they mean business and convince the public that what they say is so. We most EMPHATICALLY DISPUTE THEIR ASSERTIONS and have, therefore, the **$500** deposited for this purpose and show that we are sincere and not bluffing. In the meantime—Catalog No. 17 free on request.

The SWEET RUNNING SYRACUSE

SYRACUSE GAS ENGINE CO.

1811 PARK
SYRACUSE, N. Y.

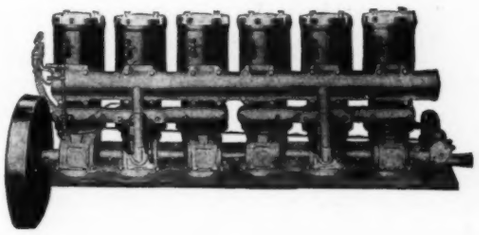
ASK THE MAN WHO RUNS ONE

THIS ACCEPTANCE WAS [PUBLISHED] IN ALL THE LEADING TRADE JOURNALS OF FEB. 1910

DANGER AHEAD!!!

THE CONSTRUCTION of the **"Syracuse"** high speed motor is along the most modern and approved lines, the entire engine being built of aluminum **except the working parts and that portion of the cylinders next to piston travel.** It has all the refinements of the pure thoroughbred, with every non-working part reduced to the lowest bulk and weight, and **every working part with a large reserve of strength.** This produces **power with economy, extreme long life** and reduces **weight below ALL competitors, and without the damages incident to the use of that "old, tried out and found wanting" idea in marine work, viz.: ALUMINUM CYLINDERS WITH CAST-IRON BUSHINGS,** as is being **ATTEMPTED** by some makers.

FOR THE DINGY, CRUISER, RUN-ABOUT, AND SPEED BOAT.



FROM 1 TO 6 CYL. AND 4 TO 120 H. P.

THE DANGERS

THE CLAIMS are made by some that a gas engine having Aluminum Cylinders with cast-iron linings, is something new, and a most important and wonderful (?) feature in its development in years. Its feature to save weight is true; the claim of its being new is **not** true. After thoroughly testing, we discarded aluminum for cylinders owning to its **great unreliability.**

WE WISH TO WARN those **few** that do not already appreciate the fact, that this is a **dangerous** combination, due to the great difference in the expansion of Aluminum and Cast Iron. The Co-Efficient of Expansion of Aluminum is .002, while that of **cast iron** is .001, showing the former to be double that of the latter.

NOW WHAT IS GAINED by entering this combination of radically different metals? A little weight 'tis true, but is it enough to involve the consequent grave **danger**? Take a specific example—an engine of say 5½ in. bore and stroke would make about 14 in. of water jacket surface, or approximately, only 17 pounds saved in weight per cylinder. This is the only possible gain **(and there is no gain as compared to the brass jacket),** and the element of danger involved to save this small weight is so great that its adoption is absurd.

BEWARE—The idea is not new. It has been tried. **It looks tempting, but is a bait—a very expensive bait!**

OF COURSE

SHOULD IT BE our sole desire to sacrifice strength and reliability for weight alone, we would use the brass water jacket, and are prepared to **so** build on order only, which, while having some objections, is much lighter and cuts out 90% of the risk as against the aluminum jacket. We state this from experience, **practical experience,** not theory, and can furnish specific cases on request.

AVOID CRACKED CYLINDERS

THE NEGLECT to turn on the Sea-Cock, or if water is drawn from bilge, thus furnishing a scant supply, or if any foreign matter is drawn into the intake pipe from either sea or bilge, or if the water circulation is interrupted, must result in disaster. The total or partial stoppage of water supply will, of course, cause the engine to heat abnormally, and when the water finally **does** come on, it being cold and striking the warm aluminum water jacket, the result will be a cracked cylinder or cylinders and a **RUINED ENGINE!**

CUT OUT THE RISK

OUR CONSTRUCTION eliminates all this and the entire engine built of aluminum, excepting the working parts of the cylinders or that portion which is next to piston travel, secures for the customer the lightest engine consistent with strength, and safeguards the users against the many dangers of leaks, blow-outs and broken cylinders. With a base, sub-base, head and all pipes of aluminum, our patrons get a minimum weight and maximum strength.

BUT IF YOU TAKE THE RISK, AND HAVE MONEY TO THROW AWAY

AND SHOULD INSIST upon the aluminum water jacketing against our advice and good practice, we will furnish it to you without a guarantee—BUT DON'T DO IT!!

WE HAVE SOMETHING THAT *IS* NEW

AND THAT WE WISH to bring to your notice and that is a design that does away with the greatest bugbear and trouble in a multiple, 2-cycle engine, namely, the use of eight or nine carbureters on a six-cylinder engine, which spells trouble, worry and adds extra weight, and also **back firing.** To operate such a system requires first, the services of an expert, and secondly, it is admitted by all practical gas engine men that the waste of fuel is very great. The greatest objection, however, is the fact that it adds about 700% to the possibilities of accident, loss of life and destruction of boat by fire, caused by leaks, back firing, etc. This is very important and merits your most serious consideration.

FREE

We will be pleased to send you on request our latest catalog No. 17 just received from the press. **Reliable and energetic agents wanted in territory not already occupied. Get our proposition.**

The SWEET RUNNING SYRACUSE

SYRACUSE GAS ENGINE CO.

1811 PARK

SYRACUSE, N. Y., U. S. A.

ASK THE MAN WHO RUNS ONE

When You Purchase Life Insurance How Do You Go About It?

Do you simply pay your premiums and then when you die let your family find out whether or not the Company will make good OR do you protect yourself and those dependent upon you by a thorough and exhaustive investigation?

Naturally as a good business man you investigate first.

Now what do you do when you purchase an engine or a motor boat? You say you investigate the engine, study its record and the company behind it. Make inquiry of some people who are using one of the kind in question and purchase because you know the manufacturers are reliable and will stand behind their product.

This is all right as far as it goes. So they will—stand behind their engine or boat—they make these themselves. BUT THEY DON'T MAKE THE IGNITION APPARATUS THAT GOES WITH IT—the magneto and spark coil, and when you have ignition trouble THEY CAN'T BE EXPECTED TO REPAIR OR REPLACE THE PART AT FAULT.

You have got to turn to the **manufacturer of the magneto or spark coil** for satisfaction and adjustment. BUT they did not sell it to YOU and as the chances are they will never make another sale to you they hardly feel under obligation. You have no chance of satisfaction at all UNLESS your ignition apparatus carries with it a "Certificate of Insurance" from the manufacturer of the Magneto or spark coil.

Specify a K-W Magneto when you order your engine, demand a K-W Spark Coil and you will receive a Certificate of Insurance from **us** absolutely protecting you.

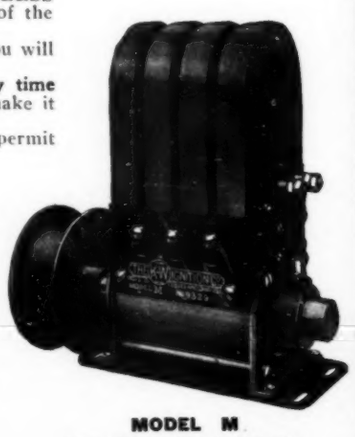
THE K-W MAGNETO

will start your engine **every time** without batteries and will make it run smoother and faster.

The K-W Magneto will permit of your using a thinner mixture and of getting **more power** out of it than you have been getting out of a rich mixture.

The K-W Magneto will produce a **hotter** spark than any dry batteries, storage battery or other magneto.

Will give you the most perfect ignition it is possible to get and all our models "L" will at the same time



MODEL M
The Motor Boat Special

Furnish You With Powerful Electric Lights

entirely doing away with the annoying acetylene generator and expensive and dangerous gas tank and is

The only Magneto Made which will operate Electric Lights and Ignition

The K-W Magneto can be relied upon not "occasionally" but **all the time.** Has no moving wires, brushes, traps or triggers to get out of order and cause trouble.

The K-W Magneto will outlast your engine and is **Fully covered by our**

CERTIFICATE OF INSURANCE GUARANTEEING IT **FOREVER**

against any loss of power (unless battery current is run through it, or the magnets are removed from the magneto, for which, of course, we are not responsible), and the size and heat of the spark will NEVER deteriorate.

Any part proving defective in material or workmanship within TWO YEARS will be replaced FREE OF CHARGE.

Don't blame the manufacturer of your engine if your ignition is always causing you trouble and expense—he will give you K-W Apparatus and K-W protection at no extra cost IF YOU DEMAND IT.

Of course it costs him more as we do not maintain a high list price which the user must pay, but from which large and unfair discounts are made.

Write for catalogue of all our models and get posted—if your present ignition system is unsatisfactory try a K-W Magneto and Spark Coil on a

Thirty Days' Trial

Let US take the risk; YOU be the judge.

The K-W Spark Coil
For any number of Cylinders. Prices upon application.

The K-W SPARK COIL

(GUARANTEED FOREVER)

Plain Box Marine Coils $6.00
Double Cylinder $12.00

The ordinary spark coil sold to-day will not stand over 6 to 12 volts without breaking down, and NONE are guaranteed for over 1 year.

What is your protection with a coil like this? You are never sure what minute it will go back on you and when it does its up to you to buy a new one—you have no redress—no come back—its a little game where YOU ARE IT!!

Now the K-W Spark Coil will stand 110 volts as safely as 6 and carries with it a

"CERTIFICATE OF INSURANCE" GUARANTEEING IT **FOREVER**

against breaking down, burning out or short circuiting and any coil that does will be replaced FREE OF CHARGE AT ANY TIME. Isn't it a good idea to have such a coil on your car when you have everything to gain and nothing to lose?

There is no other coil made anywhere in the world that is covered by such a guarantee, and it behooves you when purchasing if you want perfect service, satisfaction and elimination from all risk to

Be Sure It's a K-W and Accept No Other

Write for Spark Coil circular telling just how the K-W Spark Coil is made. It will open your eyes. Write to-day whether you are Manufacturer, Dealer or Owner.

THE K-W IGNITION Co.
50 POWER AVE. CLEVELAND, OHIO. U.S.A.

GRAY MOTORS

Don't select your motor too hastily.

If you are buying it for pleasure, a wrong selection may destroy your entire vacation, to say nothing of financial loss.

If you are buying it for business, an unreliable motor or an unreliable company behind it may cause you a loss many times in excess of the motor cost.

If you buy it from a firm who are poorly equipped, besides getting an out of date motor, it may be delivered so late as to be a complete disappointment to you.

Keep this in mind: A great many widely advertised marine motors are built in factories producing some other product—who use marine engines to "fill in" with—a side line.

Look carefully into the facilities of the manufacturer. Satisfy yourself that he is in a position to make good. See what his reputation is on that point. Be sure that his guaranty is good and that he has an organization for handling repairs, etc.

Gray Motors are built in the largest and most up-to-date plant in the world devoted exclusively to 2-cycle marine motors.

We devote our entire and exclusive time to manufacturing Gray Motors.

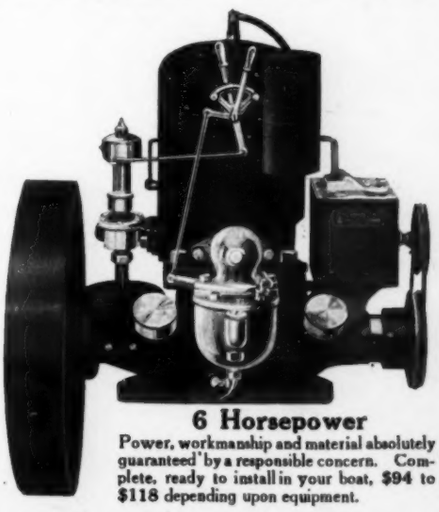
We concentrate our entire energy and capital on this one purpose.

That is why we have built up the largest 2-cycle marine gas engine business in the world.

Write us and let us show you what our organization consists of; what our experience consists of; why we can give you prompt and positive delivery, and why we can give you the highest quality which it is possible for mechanical skill to produce.

12 Horsepower

Guaranteed to develop 14 to 16 H. P. Complete outfit, ready to install in your boat, $198 to $236 depending upon equipment.



6 Horsepower

Power, workmanship and material absolutely guaranteed by a responsible concern. Complete, ready to install in your boat, $94 to $118 depending upon equipment.

1, 2 and 3 cylinders, 3 to 36 H. P.

Write for catalog today.

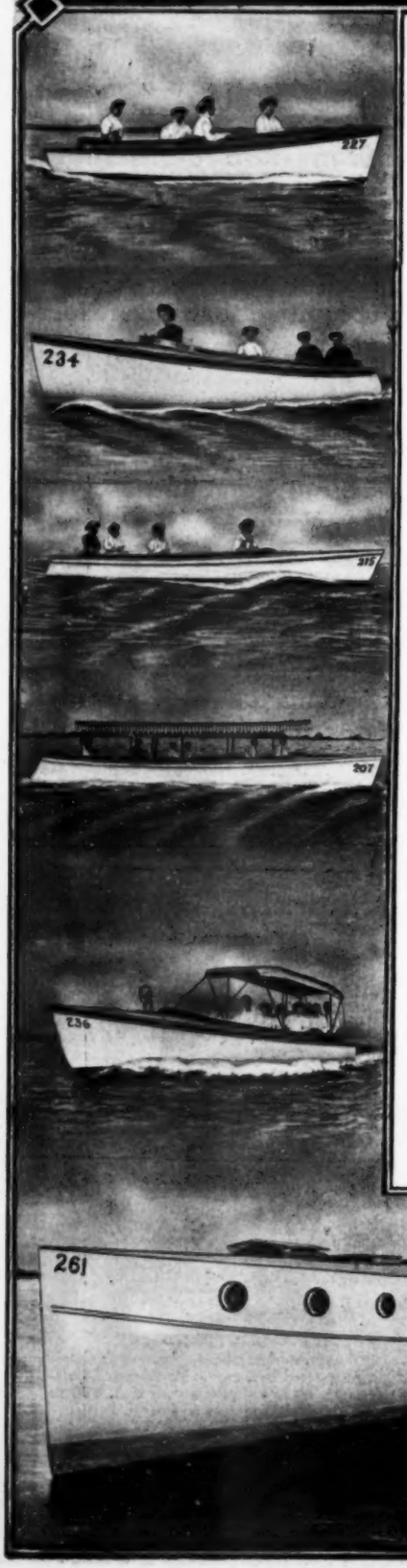
Gray Motor Co., 931 Larned St., Detroit, Mich.

SHIPPED KNOCK DOWN

BROOKS BOATS

EASILY PUT TOGETHER

GUARANTEED TO BE SATISFACTORY



YOU WANT A BOAT

Build It Yourself and Save Two-Thirds

We will furnish you with all the parts of a boat machined, cut to shape, and accurately fitted together prior to shipment, so that with a little labor on your part, you can own your own boat, at a price that is ridiculously low, or we will furnish you with instructions and full size paper patterns, from which you can build the boat yourself, by purchasing the material locally.

You want to know how it can be done? Then send to-day—not to-morrow—for

OUR NEW CATALOG NO. 24—IT'S FREE

The exceedingly low prices will amaze you

For the year 1910 we have made the enormous cut of 33⅓ per cent. from our regular prices—just one-third less than they were last year.

Do you know that local boat-builders all over the country purchase our frames—build the boats and sell them at a handsome profit? You can do this yourself and save that profit. Anyone can put our Knock-Down boats together—no skill is required. The work is a clean, instructive form of recreation—a mighty good thing for you or your boy.

We save you (1) the boat-builder's profit; (2) labor expense; (3) big selling expense; (4) seven-eighths the freight.

Don't fail to send for Catalog No. 24—it tells the whole story

OUR GUARANTEE

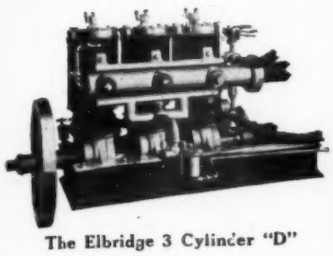
is that you will be perfectly satisfied with everything you purchase of us, or your money will be instantly refunded.

BROOKS MANUFACTURING CO.

503 Ship Street, SAGINAW, MICH., U. .S A.

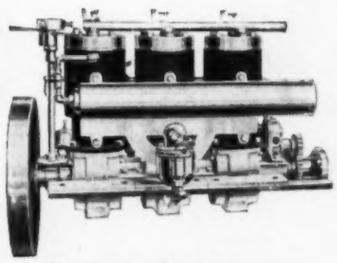
Originators of the Pattern and Knock-Down System of Boat-Building.

Established 1901



The Elbridge 3 Cylinder "D"

ELBRIDGE ENGINES



The Elbridge 3 Cylinder "A"

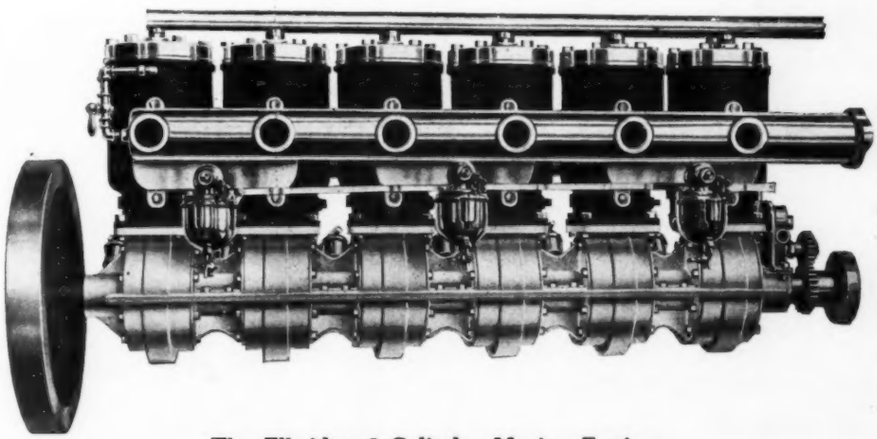
BUILT FOR

RELIABILITY, POWER, STRENGTH AND DURABILITY

It doesn't make any difference what you want to run, there's an ELBRIDGE Motor that will give you maximum efficiency at minimum cost.

We make the largest and finest line of Light Power Gasoline Engines in the World. They include over sixty different styles.

ELBRIDGE ENGINES have fewer working parts, occupy less space and weigh less than any others. Only the finest materials and most skilled workmanship are employed in their making. We guarantee them against defective construction—not for one year, but ***forever.***



The Elbridge 6 Cylinder Marine Engine

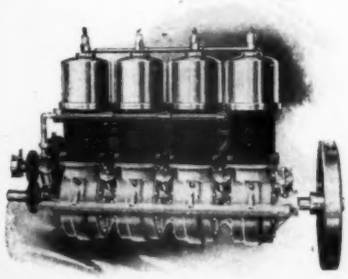
We are the only concern in America that can meet the demand for thoroughly reliable light weight motors for Aerial Navigation,

BECAUSE

we are the only concern that built an engine of the type required at the time the demand for this sort of motor started. We've been selling them for marine work for more than four years. Hundreds of satisfied users testify to their reliability.

We make a 40-60 H. P. Motor that weighs only 167 lbs.

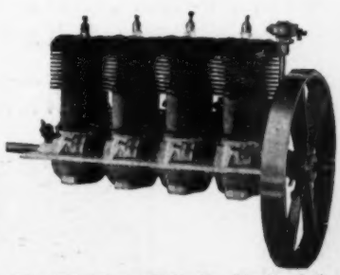
Write For Information.



The Elbridge 4 Cylinder Copper Jacket

Elbridge Engine Co.

Dept. M. **ROCHESTER, N. Y.**



The Elbridge 4 Cylinder Air Cooled

Varnish

Give it a coat of varnish! The man who does not specify what varnish and know why, is not giving himself a square deal. The difference in cost between the right and the wrong kind, is not worth talking about, but the difference both in appearance and wearing quality is big—very big.

Why is it that when the yards in Europe build a yacht they are particularly particular about, they send to this country and buy

Edward Smith & Co.'s Spar Coating

simply because it has stood the test of time—no guess work about it. Ask any prominent designer, builder or yachtsman.

It looks well, it wears well, it requires no explanation, no excuses.

83 years' experience in every can.

Free for the asking.

Winners—Being a record of the names of the winning yachts and owners of the racing season of 1909.

Edward Smith & Co.

Varnish Makers for 83 Years

West Avenue, 6th and 7th Streets, Long Island City

P. O. Box 1780, New York City

Western Branch, 3532-34 S. Morgan St., Chicago

A New 35x9 Foot Truscott Cruiser

A 35 x 9 foot roomy and seaworthy cruiser, with many features that will appeal to the experienced. Members of our firm have tried out this craft in actual service,—a total of six weeks' cruising. Nothing about it that is experimental.

The 9 foot width insures a roomy boat, therefore, a comfortable one. There are two sleeping compartments separated by a toilet room, the latter being accessible from either sleeping compartment without disturbing the occupants of the other. Exceptional locker and wardrobe space is provided as well as a convenient arrangement of galley and folding table.

The cockpit has a wide lockered thwart seat with high back and space for four or five rattan chairs.

The motor installation consists of a four-cylinder four-cycle Truscott 21 H. P. motor, with dual high-tension magneto ignition, mechanical oiler, etc., an ideal power for a cruiser. The control of boat and motor is in the hands of one man. Salt water equipment throughout. Mahogany and white enamel finish.

THE PRICE is exceptionally low, based on the construction of no less than ten exactly alike for 1910 delivery. Better look into this,—it offers a big value.

Our general catalogue A illustrates and describes our entire line, except above craft. Ask for special literature if interested in it.

TRUSCOTT BOAT MFG. CO.

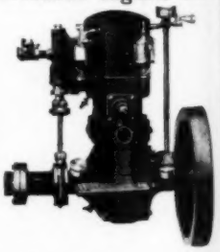
Box 8, St. Joseph, Mich.

Branches with stock in New York, Boston and Chicago

"PERFECTION" ENGINES

Highest Refinement--- Finest Finish, Most Power

Perfection engines for 1910 outclass all others in refinement, finish and power. Write at once for New Catalog that tells all about it. Get this Catalog if you aim to enjoy motor boating this year. Perfection engines have larger cylinder area; are more powerful in proportion to size; built more solidly; machined more perfectly; run more smoothly; are cleaner and easier to operate. Stand more hard work and have finer equipment and finish.



2 H.P. $48

With Complete Boat Equipment

Lowest prices in the world for high quality engines. Other sizes at proportionate prices. Catalog shows 2 to 25 H. P., one to four cylinders. Postal will bring a copy at once. Write today.

The Caille Perfection Motor Co.

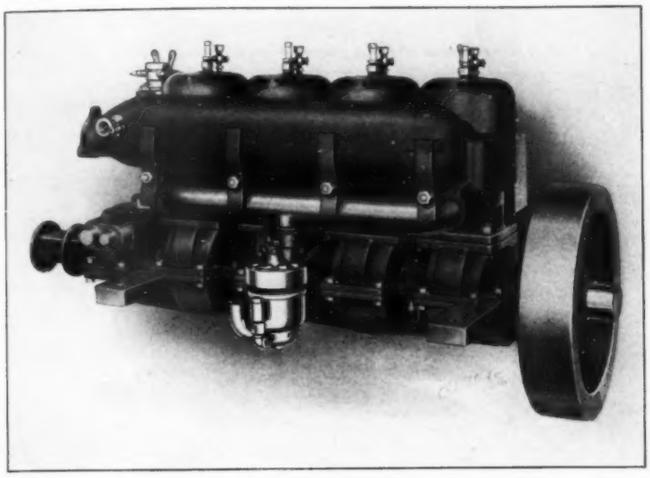
Amsterdam Ave. Detroit, Mich.

New Orleans—Gibbons & Stearn, 213 Canal St.
Baltimore—Loan & Hiltz Engine Co.
Boston—G. G. McLaughlin Co.
New York City—Bruns-Kimball Co., 134 Liberty St.
Philadelphia—W. S. Carman, Philadelphia Bourse.

Roberts Motors Win Again

After the most thorough tests by expert mechanical engineers, the W. H. Mullins Co. (The World's Largest Boat Builders), recently placed an order for 2,000 specially designed Roberts Motors. This is the largest order ever placed for marine engines and is convincing evidence of the superiority of Roberts Motors.

ROBERTS 1910 MODELS ARE THE PERFECTION OF SIMPLICITY



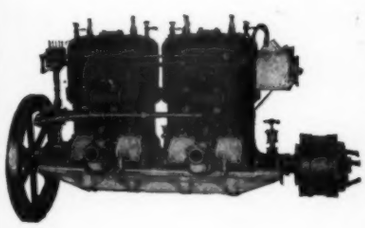
The large ports, which have proved such a success on 1909 Model P will be used on all 1910 models—the new noiseless carbureter, with but one adjustment (the gasoline) is a great improvement. Gear-driven mechanical oilers will be supplied with all motors from 10 H. P. up, also gear pump—readily accessible and easy to remove for packing or cleaning without disturbing the piping.

The Roberts is the only two-cycle engine made that is absolutely guaranteed against backfiring or base explosions. It is the lightest and most efficient engine built. Every part is so accurately adjusted that it starts on the first turn of the crank, and will not stall at any speed. The Roberts gives greater power and more speed than any other motor of the same H. P. made.

WRITE TO-DAY FOR BOOK OF TESTIMONIALS AND CATALOG which fully describes our 11 unequalled models, from 1½ to 60 H. P. and their many new improvements.

THE ROBERTS MOTOR COMPANY

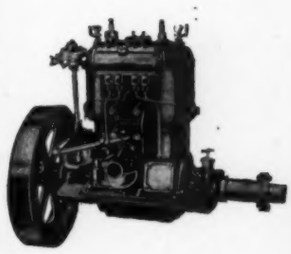
1501 Columbus Ave., SANDUSKY, O., U. S. A.



4 Cylinder, 2 Cycle, 5x5, 40 H.P.

Atwater-Kent Ignition. Force Feed Mechanical Oiler. Composition Aluminum Base. Salt Water Fittings. Nickel Steel Cranks.

480 lbs. : : : $500



2 Cylinder, 2 Cycle, 20 H.P. $250

60 H.P., 6 Cylinder, 2 Cycle Racer, 300 lbs.

CRANK SHAFT. Krupp nickel steel.

CYLINDERS. Finest quality of Swedish gray iron.

WATER JACKET. Of hammered nickel and copper composition, in one piece, surrounding the six cylinders.

CRANK CASE. Composition of nickel and aluminum with hollow segments between the bearings.

FRAME. Of skeleton form of Krupp nickel steel surrounded and braced by nickel-aluminum crank case.

BEARINGS. Of pure nickel and tin formed under pressure and are interchangeable.

CONNECTING RODS. Nickel steel with inserted bearings.

WRIST PINS. Of tool steel bored hollow and ground.

PISTONS. Dome shaped top with radiating fins upon under side and provided for cold-air blast to sweep the inner surface at each stroke.

FLY WHEEL. Has a ground center of high carbon steel with a ¼ in. thickness at the hub and a thickness of 1-32 in. at the rim, to which is attached a rim of Manganese Bronze. The peculiar construction of this wheel allows it to act as a gyroscope, owing to the flexible center, and places the weight in the proper position without cross strains on the crank.

REVERSE GEAR. Entirely of nickel-steel and bronze constructed upon the multiple disc principle and is the lightest and strongest gear yet produced, weighing less than 40 pounds. Price $100 extra.

WEIGHT. Engine without reverse gear, 298 pounds, or less than five pounds per horsepower.

THRUST BEARING. Is of a special multiple roller type, suitable means being provided for lateral adjustment that the cranks may not be forced out of alignment with the cylinders.

EXHAUST PORTS. Entirely surrounded by water, are of very liberal dimensions and each one leads to a separate vertical chimney of 24-gauge steel. If desired, they can be furnished piped into one outlet with muffler.

CIRCULATION. By special form of nickel-copper composition pump which forces water through the main jacket without the use of piping.

IGNITION. By single coil and special timer and distributer.

MANIFOLD. A composition of nickel and aluminum of ample size to supply six cylinders.

CARBURETOR. Is of special design built into the manifold and having an intake opening of 16 sq. in. which is approximately the capacity of sixteen ordinary carburetors, thus reducing the back pressure to a minimum and avoiding the use of a number of individual carburetors which have been found impossible to adjust in unison.

COMPACTNESS. The compactness of this motor may be understood from the fact that the base is but 34 in. over all, and but 10 in. between foundation timbers, with a total width of 13 in. Height, above center of shaft, 18 in., and below center of shaft, 5 in.

PROPELLER. This is specially constructed of aluminum and nickel and is 20 in. diameter and 35 in. pitch and weighs but 5¼ lbs. Under normal conditions, with suitable hull, this engine turns this wheel above 1200 R. P. M. A greater pitch can be used with greater diameter if the hull is of specially light construction.

PRICE. Without reverse gear but inclusive of wheel and Tobin bronze shaft is $1050.00.

Special Inducements to Agents

Emerson Engine Company, Alexandria, Va., U.S.A.

WESTERN CREOLE RUNABOUT

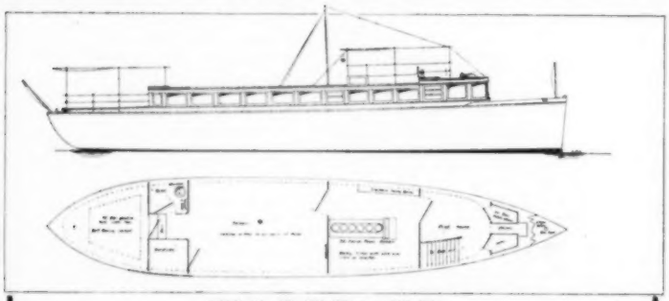
23 ft. by 4 ft. 4 in. Speed 15-17 miles

FOUR CYCLE MOTOR | ONE MAN CONTROL | PRICE $365.00

BUILT BY

WESTERN LAUNCH CO.

MICHIGAN CITY, IND.



"Niobe" 50 Ft. x 10 Ft.

We design and build high-grade boats. Up to 100 Ft.

¶ Tell us your needs and let us submit plans.

MATHISEN BOAT COMPANY

152 River Street, OSHKOSH, WIS.

TELEPHONE, 4000 CHELSEA

For Anything You Want Quick

FOR THE GALLEY, PANTRY, SIDEBOARD, OR FOR THE MOTOR

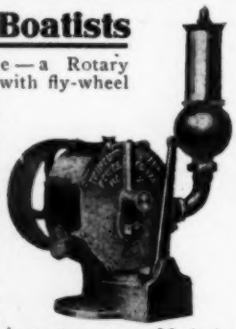
DELIVERIES FREE ALMOST EVERYWHERE

SIEGEL COOPER CO.

SIXTH AVENUE, NEW YORK

Ahoy! Motor Boatists

An entirely new device—a Rotary Blower driven by friction with fly-wheel of the engine. **Does away with tanks. Tanks are dangerous.** This Blower throws a large body of air and with our special Bell Whistle, makes a loud, clear tone. Can be heard at a great distance, and the blast is maintained as long as driving wheel of Blower is in contact with fly-wheel of engine. No variation or falling off in tone as with compressed air system. Made in three sizes.



Trimount Rotary Whistle Blower $15. And Up.

This outfit is very simple, nothing to get out of order. Whistle can be placed on deck wherever desired and the pull can also be located in any part of the boat. Blower is made entirely of bronze and extremely durable.

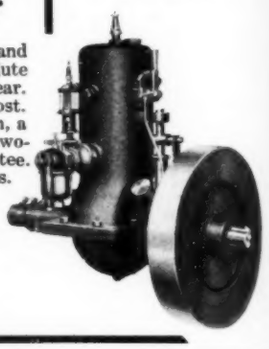
YOUR PROTECTION: Money back if not satisfactory.

TRIMOUNT ROTARY POWER CO., Mfrs. 206 SUMMER ST. BOSTON, MASS.

$40 COMPLETE READY FOR YOUR BOAT

Powerful Engine for High Speed Boats

Used in Government Harbor Service and Chicago Police boats. High speed, absolute reliability. Extra power and extra wear. Compact, silent running. Low running cost. So simple in construction and operation, a woman or child can run it. The perfect two-cycle engine. 2 to 10 H. P. 2 year guarantee. Special prices to boat builders and agents.



Our engine book contains valuable facts about Marine Engines that everybody interested should know. Also illustrates and describes our complete line of marine engines—free on request.

Northwestern Steel & Iron Works

BOX 291e, EAU CLAIRE, WIS.

The Famous Michigan Speed Wheels, Reverse Gears and Marine Hardware

are used in some of the fastest and most up-to-date motor boats in the world today.

We want every dealer and manufacturer of marine engines to send for our 1910 catalog, full of valuable information, also every man who owns, builds or sells boats.

We are the largest manufacturers making a specialty of this line of marine goods and we carry an immense stock. Our factory equipment enables us to make prompt shipments.

Send for free 1910 catalog today

MICHIGAN WHEEL COMPANY

556 Canal Street Grand Rapids, Michigan, U. S. A.

BOAT BUILDERS BOAT OWNERS

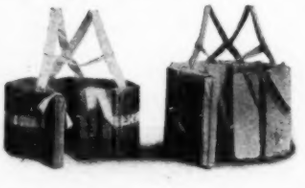
Save Time and Money In Installing Motor By Using *"INDISPENSABLE MOTOR BOAT DEVICES"*

Our Stuffing-box, Shaft Coupling and Hanger align automatically with the shaft, making it easy to install motor in half the time required with rigid bearings. Also eliminate binding stresses due to distortion of hull under power. Our neat, light-weight, metallic shaftlog combined with automatic aligning stuffing-box, does away with the troublesome wooden shaftlog. Hundreds of builders are now using our metallic log—those who do not are being forced into line by the progressiveness of those who do.

We make the only **reversible** submerged exhaust on the market and many other things you ought to know about before buying, building or repairing a boat. See our practical demonstration at the New York Motor Boat Show.

MECHANICAL DEVICES CO., WATERVLIET, N. Y.

A-B-C LIFE PRESERVERS



SMALLEST LIGHTEST MOST EFFICIENT AND DURABLE MADE

Approved by U. S. Inspectors

BRONZE MOTOR BOATS

Lighter, Stronger, Safer than Wood

NON CORROSIVE, NON FOULING

See Our Exhibit at the NEW YORK MOTOR BOAT SHOW

WELIN DAVIT AND LANE & DE GROOT CO.

17 Battery Place New York, N. Y.

Guaranteed not to be taken from your cylinder for the entire year

Others may be easy to clean

You don't have to clean this one

Mica only

$1.50

Don't this look good?

See the Inner Shell

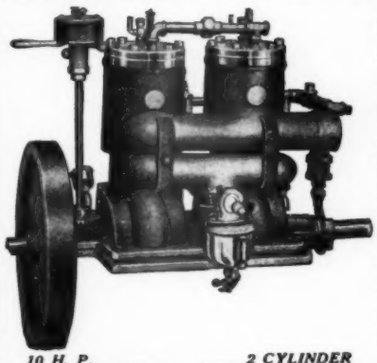
See the Sharp Nose

The National Steel Products Co.,

225 to 227 Broadway
Lorain, Ohio

Send for Catalog of IGNITION Goods

Your Interest Demands an investigation of The Wonder Marine Gasoline Engines



Smoothest running and most powerful engines for their weight that have ever turned a propellor.

This is one of our latest engines and is ahead of anything else on the market. Complete with Schebler carburettor, Crouse-Hinds timer and silent muffler. Runs equally well in either direction. Is built to run and does it.

Superfluous weight is eliminated by careful designing, resulting in a steady, powerful machine. Will drive an ordinary 20 to 21-foot boat 12 to 16 miles an hour. Equipped with a plunger pump, which can be run in either direction without clogging.

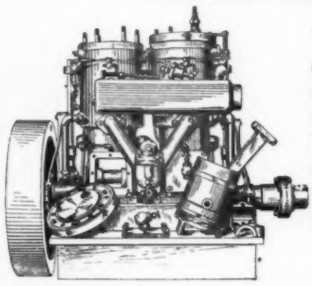
We make engines from 1½ H. P. to 75 H. P., and they are all constructed in the same careful, thorough manner. There are 3,000 Wonder Marine Gasoline Engines throughout the United States. We say frankly you ought to investigate the Wonder Engines before deciding. Write for catalogue giving all details and price list. Prompt Shipments.

10 H. P. 2 CYLINDER
$200 COMPLETE WEIGHT 200 LBS.
Attractive proposition for live representatives.

THE WONDER MFG. CO.
257 Tallman St., Syracuse, N. Y.
New York Agents, Universal Automobile & Motor Boat Supply Co., 13 Chambers St.

THE BRIDGEPORT

"The Motor That Motes"

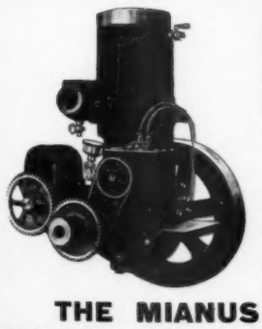


The only motor in which all working parts are removable without complete disassembling,

Medium speed type—Liberal cylinder capacity—Large durable working parts.

Send for Catalog

The Bridgeport Motor Co., Inc.
BRIDGEPORT, CONN.



1910 MIANUS

NO BATTERY NO SPARK COIL

The Mianus Motor is not a new idea or a freak but a gradual growth of thirteen years

Medium weight Moderate speed
Nickel steel forgings, bronze bearings

BUILT TO LAST A LIFETIME

Sizes 3 H.P. to 15 H.P. See 1910 Catalog

THE MIANUS MOTOR WORKS
Main Office and Factory: MIANUS, CONNECTICUT, U. S. A.

BRANCHES:
New York City, 76 Front St. Newark, N. J., 128 Front St. Boston, Mass., 12 Commercial Wharf
Portland, Me., 29 Portland Pier Philadelphia, Pa., Bourse Bldg.
Providence, R. I., 144 Dorrance St. Baltimore, Md., Pratt St. and Market Place
St. John, N. B., 29 Nelson St. Norfolk, Va., 115 Main St. Seattle, Washington

Light your boat with sunlight—or its equivalent

Henry J. Gielow
the famous engineer and naval architect says:

"The Acetylene plant you installed in the "Ramoli" (a 311-ft. boat) six years ago has been in constant use ever since then and has given absolutely no trouble. I have had your system installed in a number of other yachts with equally good results, so I do not hesitate to recommend it to any of my clients who consult me on the subject."
(Signed) H. J. GIELOW

Send for detailed, descriptive and illustrated Catalogue today.

The "equivalent" or substitute for sunlight is brighter than electricity and cheaper than oil, is suitable for big boats and little boats, for power boats and sailing craft, for cooking as well as lighting, and is absolutely safe to use. The

Acetylene Safety Storage System

has the sanction of the National Fire Underwriters and the U. S. Steamboat Inspection Service; is used in the boats of the U. S. Revenue Cutter Service, the Coast and Geodetic Survey, the Department of Commerce and Labor, and by hundreds of the most prominent yachtsmen in the country. Our catalogue tells the advantages of the *Safety Storage System* over all other forms of boat-lighting. Drop a postal for a catalogue—now.

The Commercial Acetylene Co.
80 Broadway - - - New York City

Loveland Marine Motors are Guaranteed for 5 Years

That's a long time, but it's a guarantee that we've never been asked to make good on.

Single cylinder; two cycle; reversible; sparking system absolutely waterproof; no valves; no gears; no automatic sparker or springs: no anything that is troublesome or unreliable.

The Loveland single cylinder, two cycle motors are made in 2, 4½ and 7 h. p., and while they are high quality all through they are low priced.

Write for 1910 Catalogue now

LOVELAND MANUFACTURING CO., 17 Atlantic St., Bridgeton, New Jersey

WHAT A COLUMBIAN SPEED PROPELLER DID.

The famous "La Truda," the fastest 32-foot boat in the world, won her title through a Columbian Speed Propeller. The installation of a Columbian Speed Propeller just before her famous race with Hoosier Boy added two miles an hour to her speed and won the contest.

What a Columbian can do for your boat

No matter how little the power that you have it will add speed to your boat. Write for "Propeller in a Nutshell."

COLUMBIAN BRASS FOUNDRY
Freeport, L. I., N. Y.
Member National Association Engine and Boat Manufacturers.

Let Us Send You This Free Book

We want every motor boat owner to have our book. It took us 10 years to make this book complete, 10 years of study of what a motor boat's equipment should be. And the 1500 illustrations and beautiful color plates it contains, are both instructive and interesting.

The Hopkins Book

The Hopkins establishment is the pre-eminent marine hardware concern of the United States. So great are its buying facilities that it affords the best quality of equipment at prices lower than the ordinary. And through a splendid mail-order system it supplies the wants of every discriminating motor-boat owner in America. It will pay you to get acquainted. A postal brings the book, an excellent introduction.

John C. Hopkins & Co.
119 Chambers Street, New York City

THIS BOAT WAS BUILT BY AN AMATEUR, WITH A FAULTLESS ERECTED FRAME

YOU CAN BUILD ONE JUST LIKE IT

29 Ft. x 7 Ft.
Raised Deck Cruiser

We are NAVAL ARCHITECTS and MARINE ENGINEERS SPECIALIZING IN YACHT and LAUNCH DESIGNS. Our boat frames and patterns are our means of selling SCIENTIFIC SERVICE and EXPERIENCE in concrete form to the best advantage of the amateur boatbuilder.
NO other concern combines the services of a NAVAL ARCHITECT with their own shop facilities for delivering frames from his designs.
WE give attention to the small details that others neglect and this enables us to guarantee SUCCESS OR MONEY BACK.
STOCK DESIGNS include 72 LAUNCHES, SPEED HULLS AND CRUISERS from 18 to 45 feet.
LAUNCH and speed boat frames are SHIPPED ERECTED, READY TO PLANK. Instructions include complete set of NAVAL ARCHITECT'S PLANS with explicit directions for completing the boat by our EASY-TO-BUILD METHOD. No moulds are required and planking requires no calking.

FAULTLESS FRAMES give you 30 per cent. more material and 50 per cent. more labor than our nearest competitor. This means less work for you to do.

VALLEY BOAT AND ENGINE CO., 99 Canton Street, BALDWINSVILLE, N. Y.
Catalog "K" tells the whole story. Sent on request

The WATERMAN Special Speed CANOE
—or Racing Yacht Tender—

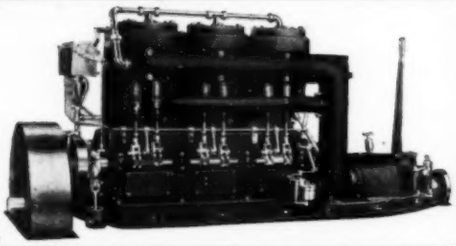
The biggest little boat you've ever seen. Built by the leading canoe builders of America. Graceful in design. Most approved speed lines. Staunch construction. Mahogany trimmed. $300 up. Specially designed for our famous ***Model K Motor.*** Length 20 feet. Beam 3½ feet; equipped with our 1, 2, 3 or four cylinder Motor, or two 3-cylinder Motors and Twin Screws. A "goer" from the start; a delight all the time. Send for catalog with full description. Remember it is an exclusive canoe creation. Catalog describes also our famous Porto Motor (Outboard) and our standard models from 1 to 30 H. P.

Waterman Marine Motor Co., 1531 Fort St. West, Detroit, Mich., U. S. A.
Rober Machinery Company, Portland, Ore., Distributors for Pacific Coast.

BORE AND STROKE MEANS H. P.

If you paid for a gallon of gasoline, you would not accept a pint. Why then when buying a gas engine, accept it on some claim of H. P.? Investigate the BORE and STROKE and insist on getting what you pay for. The "Wolverine" will stand the closest investigation on H. P. It is built to work night and day, every day of the year. It will pay you to investigate the "Wolverine" Kerosene-Gasoline Engine.

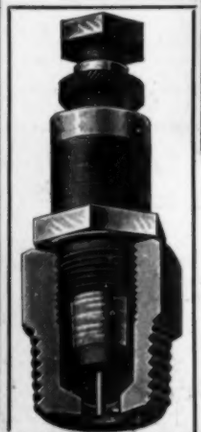
WOLVERINE MOTOR WORKS
BRIDGEPORT, CONN., U. S. A.
Reliable Sales Agents Wanted — Catalog No. 53 Free Upon Request



JEFFERY'S PATENT MARINE GLUE

Use No. 1 Extra Quality for deck seams of Yachts and Motor Boats.
Use No. 7 Soft Quality or Waterproof Liquid Glue for filling and waterproofing canvas for covering Boats and Canoes, Cabin Tops and Decks.
For sale by all Yacht, Boat and Canoe Supply Houses and Sporting Goods Dealers. Send for samples, specimens, circulars, directions for use, etc.

L. W. FERDINAND & CO., 201 South Street, BOSTON, MASS,. U. S. A.



COMET Spark Plugs

SOOTLESS Spark Plugs

THE FOLLOWING JOBBERS HANDLE COMET and SOOTLESS SPARK PLUGS

NEW YORK
WYCKOFF, CHURCH & PARTRIDGE
CHARLES E. MILLER.
THE WEAVER-EBLING AUTO CO.
TIMES AUTO SUPPLY CO.
MUTUAL AUTO ACCESSORIES CO.
W. K. THOMAS
CHAS. H. BEECHER
H. J. HUSH
NEW YORK AND BROOKLYN AUTO SUPPLY CO.

PHILADELPHIA
PENN AUTO SUPPLY CO.
JAMES L. GIBNEY & BRO.
AUTO LIGHT & MOTOR SUPPLY CO.

CHICAGO
EXCELSIOR SUPPLY CO.
THE AUTOMOBILE SUPPLY CO.
STANDARD AUTO SUPPLY CO.
BECKLEY-RALSTON CO.
MOTOR CAR SUPPLY CO.
FRANCO-AMERICAN AUTO SUPPLY CO.
H. PAULMAN & CO.

ST. LOUIS
NEUSTADT AUTO & SUPPLY CO.
BEHEN-FAUGHT MOTOR SUPPLY CO.

THE OAKES & DOW CO., 15 Chardon Street, BOSTON, MASS.

SAVE $2,300
ON THIS
CRUISER

ONLY FIFTY OF THESE BOATS CAN BE BUILT THIS SEASON

Here is a boat, a regular sea-going beauty, that will delight the most fastidious yachtsman. The more particular you are, the more "boat-wise," the more of a "motor boat crank" the better will you be pleased. It's a boat that is just as well suited, too, to the man who is just a novice, who is without boating experience. **You,** if you are this sort of a coming yachtsman, will find here no complication, nothing that you can not understand and manage **yourself** with entire comfort and safety. This boat is the new

RACINE MUSKEGON

36-foot combination raised deck and trunk cabin off shore cruiser. **This boat is the biggest sensation of the boating year.**

Here is the boat that is more than "big enough" to turn around in—with the accommodations and conveniences and comforts you can only obtain in a "big boat"—with the stiffness and seaworthiness and power that only size can give—but yours for the price others would charge for an ordinary speedabout.

She will go any where there is 2 feet 6 inches of water and you can take your friends on this boat, with cruising acommodations for eight, toilet room, owner's state room, and a big roomy cockpit holding ten without crowding. The galley is big, fresh water tanks for salt water cruising; ice box; surplus storage, and all, a real home on water independent of all the hotels on earth.

A powerful motor of the latest type—four cylinder, 4 cycle self-starting, developing 25 to 30 H. P.—with double ignition system, gear-driven magneto, all so simple that even a novice will have no trouble.

Everything that goes with a boat is included, dinghey and davits, lights, screens, standing tops, cushions, flags, signal mast and fittings, power whistle, fog bell, life preservers, boat hook, stove, removable table, etc. Wired for electric lights. Sounds like a marine catalogue, doesn't it? You will find few extras to buy for this boat, and as for **low cost of maintaining** this new Racine will go farther on less running cost than any other boat of her size that ever pulled her nose outside a harbor. Her gasoline tanks hold enough for 400 miles at a single filling, and go this distance at an expenditure of $10 for gasoline.

Never Before Has a Boat of this Size and Power Been Sold Within $2300 of the Price We Ask

Other builders with limited capacity and old-fashioned methods, or any builder on earth who attempted to build one of these boats, would have to ask $3,500 to $5,000, but our price is $2,200 for the whole outfit.

The secret is perfect organization and the biggest boat factory on earth. Many boats make low prices—we build many boats.

Every detail of hull and fittings is up to the regular Racine standard, nothing scrimped, no pains of labor or material spared just to make the price low. The usual Racine guarantee covers the boat.

YOU CAN OWN A BOAT

You can afford to own this boat and run it yourself. You will require no crew. If you are a novice perhaps you thought you could not afford a big power cruiser. It's a "one man" boat, in the sense that you can handle it all by yourself, if you wish, and go anywhere. If you are an experienced motor yachtsman you can buy or have built for you no better boat than this, a perfect off shore cruiser built for hard and continuous service with little or no upkeep.

We will gladly tell you about this newest member of the Racine family as well as the other boats we make—everything that goes on water, from the largest to the smallest—our 28-foot cruiser at $1000, a speed boat at $300, a Power dory at $150, etc., etc.

BRIEF SPECIFICATIONS

Head Room	6 ft. 0 in.
Draft	2 ft. 4 in.
Beam	8 ft. 6 in.
L. W. T.	30 ft. 5 in.
L. O. A.	36 ft. 0 in.

FRAMING—Throughout of sound white oak, except clamp of yellow pine. Frames steam bent. Galvanized fastenings throughout.

PLANKING—Long Leaf yellow pine, 1 inch, all screw fastened.

COCKPIT—Ceiled and paneled in oak, ample for 10.

GASOLINE TANK—Latest type; all spillage or leakage outbound, removable without injury to woodwork.

CABIN—Sleeping accommodations for eight. Finished in best white enamel.

GALLEY—Thoroughly equipped, stove, etc.; ample cupboards and storage; ice box, water tank, etc.

RUDDER—Balanced type.

MOTOR—25 H. P., latest type.

DECK CONTROL—Engine and boat operated from cockpit.

FINDINGS—The equipment of this boat is the most complete ever produced. It includes everything ready for use and which are commonly called "extras." Delivered ready to take on gasoline and provisions and start on a cruise of any length without further bother. A complete cruiser at a stripped boat price.

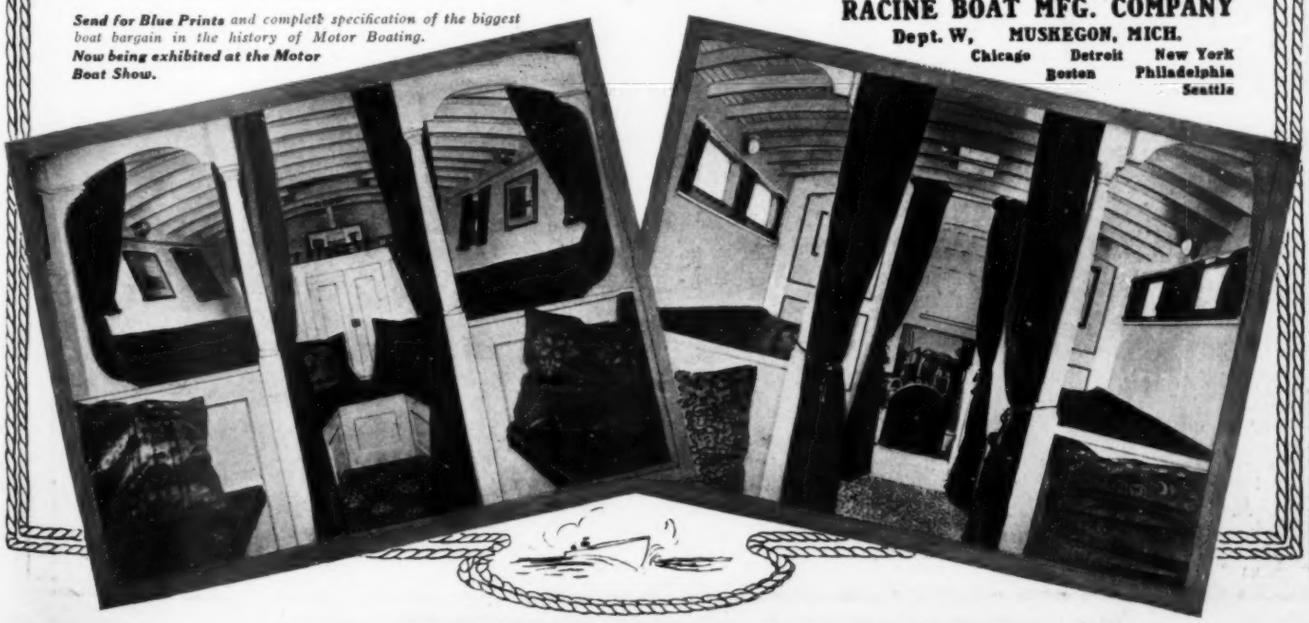
***Send for Blue Prints** and complete specification of the biggest boat bargain in the history of Motor Boating.*

Now being exhibited at the Motor Boat Show.

RACINE BOAT MFG. COMPANY

Dept. W, MUSKEGON, MICH.

Chicago Detroit New York Boston Philadelphia Seattle



Only One Motor Boatman in Every 200 Can Have This Great Engine

200,000 people in the United States own power craft, or have announced their intention to buy. Of these, 1,000 — or only one in every 200 — have the mighty Ralaco Engines.

Yet the entire output of Ralaco Engines is constantly taken by motor boatmen who engage in the **larger** pleasures of motor boating — men who run their craft to the Bermudas and back — who do not hesitate to take long river, lake and sea voyages impossible to ordinary engines.

RALACO

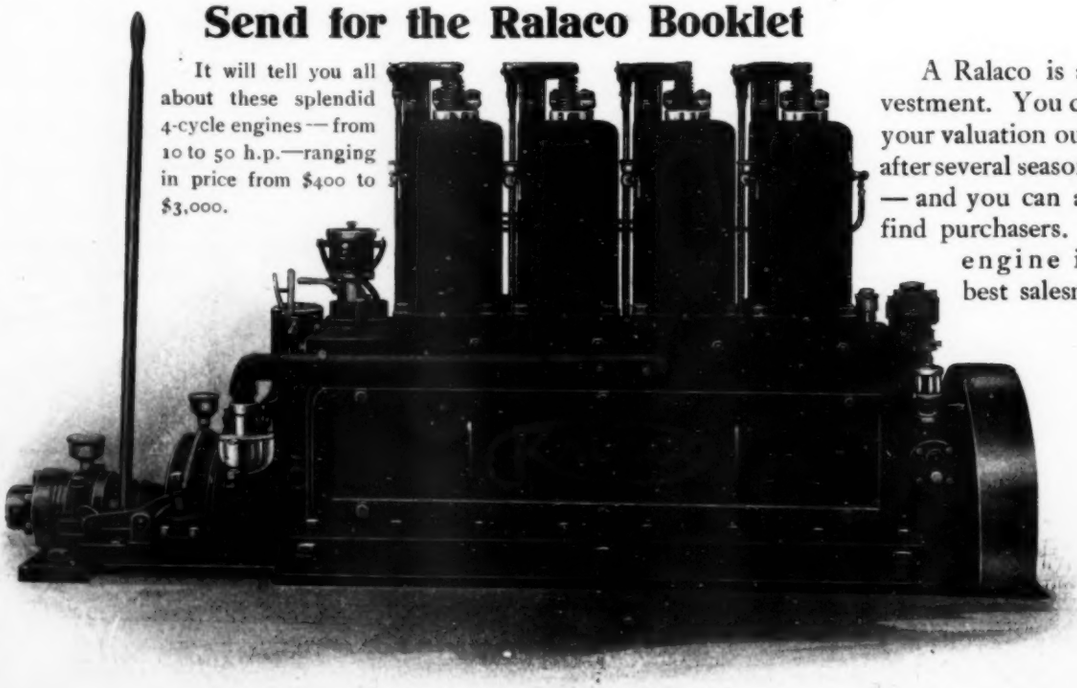
THE SILENT SIMPLIFIED ENGINE

Whether you want to take such a voyage or not, it is a satisfaction to have an engine **capable** of such service. This is the engine which drove the big cruiser Nomad II, Toledo to New York and back, without need of the slightest adjustment. The engine ran continously 6½ days — 24 hours each — never missing an explosion — with no attention except the replenishing of the fuel and oil supplies.

Ask owners of Ralaco Engines. They will tell you that their Ralaco is equal to performances as far beyond the ordinary as those we cite.

Send for the Ralaco Booklet

It will tell you all about these splendid 4-cycle engines — from 10 to 50 h.p.—ranging in price from $400 to $3,000.



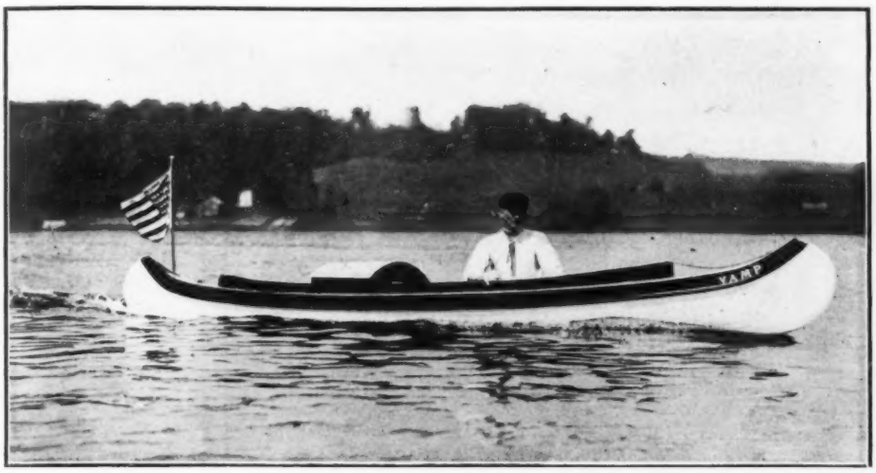
A Ralaco is an investment. You can get your valuation out of it after several seasons' use — and you can always find purchasers. Our engine is our best salesman.

THE S. M. JONES COMPANY 112 Linden Ave., TOLEDO, OHIO
136 Liberty Street, NEW YORK

(9)

When *you* buy a motor for that boat---Be it a Canoe or Speed boat---

Canoes Equipped with Refined Motors Always Win! *WHY?*



You want the best your money will buy!

There Are Reasons—

LIGHT WEIGHT---

Refined 3 H. P. Motors weigh 60 pounds and Refined 2-cylinder, 6 H. P. Motors weigh 110 pounds (weight is not necessary to power). We could build heavy motors at much less cost, but the---

MATERIALS---

used in Refined Motors are ***Refined.*** There is no superfluous weight. The best materials cost more---therefore you get more for your money.

SIMPLICITY---

The designers of Refined Motors have kept this word and idea constantly in mind---and as a result Refined Motors are the ***acme of simplicity.*** There are but four movable parts (all thoroughly oiled).
No valves, cams or springs (***you know*** these parts give trouble).

COMPLETE EQUIPMENT---

is furnished with each motor---and each article is of the same high grade as the motor itself.

PRICES---

are based on our facilities for building large numbers---5,000 will be turned out in 1910---more than 2,500 are sold---

WE GUARANTEE

every one---against defective material and workmanship---and our guarantee means something---

WRITE TO-DAY

for catalog---and story "A Summer Trip Through Florida Waterways," sent free on request---
Tell us what style boat ***you have*** or what you ***intend*** to have---

Thrall Motor Co., 2-38 Twenty-first Street, Detroit, Mich.

THE GURNET DORY

AND THE

SEMI-SPEED CLIPPER LAUNCH

ARE

SEA-GOING MOTOR BOATS

ESPECIALLY ADAPTED FOR

YACHT TENDERS

And use on the Atlantic Coast Waters and Large Inland Lakes.

GURNET DORIES
18½ feet
20½ feet
23½ feet
25½ feet
Catalog "D 4"

25-Foot Gurnet Dory at Full Speed

SEMI-SPEED CLIPPER LAUNCHES
25 feet
30 feet
Catalog "C 4"

The **Gurnet Dory** is absolutely seaworthy, non-capsizable. Power---Our **Famous Atlantic and Atlantic Special Motors,** with waterproof ignition. Our hulls are built during the winter months, under the most favorable manufacturing conditions, by day labor, from selected, seasoned stock.

Last year over 100 people were disappointed because they waited too long to place their orders. Our 1910 schedule of all sizes is 50 per cent. greater than last year. A large part of these boats are built and a great many already sold. We can still specify a date of shipment to meet your wishes, but this will not last long.

A limited number of ATLANTIC and ATLANTIC SPECIAL MOTORS---the same as supplied the Government, and used in our boats---will be sold separately from our hulls. Catalog "E 4."

Amesbury Factory

Spray-Hoods To fit all our boats, or made to your measurements, from genuine Government dye khaki duck.

THE ATLANTIC COMPANY

AMESBURY, MASS.

BOSTON: 93 HAVERHILL STREET
NEW YORK: ROOM 612, 30 CHURCH STREET

KNOX MARINE MOTORS

There are so many points of superiority and perfection in the Knox Marine Motors that it takes a large, profusely illustrated catalogue to do justice to them in detail.

A post card from you will bring the catalogue to you by return mail.

Sizes 2½ H. P. to 40 H. P. Two and Four-Cycle.

Do justice to yourself, your boat, and us by investigating these famous gasolene motors.

We build boats. Send for catalogue describing the Famous Knox Dory Launch.

CAMDEN-ANCHOR ROCKLAND MACHINE CO.
CAMDEN, MAINE
General Sales Office, 114 State St., Boston, Mass

ALUMINUM
BRASS —— BRONZE
CASTINGS

LARGEST PLANT IN U. S.
UNEQUALED FACILITIES
Low Freights. Let us quote on your requirements.

ALUMINUM FOUNDRY CO.
MANITOWOC, WIS.

2 H. P. DETROIT ENGINE

$29.50 Engine only, without Electrical or Boat Equipment

Other sizes at proportionate prices in stock ready to ship. Single cylinder engines, 2 to 8 h. p.; double cylinders, 8 to 20 h.p.; four cylinder, 50 h.p. Engines start without cranking. No cams, no sprockets, only three moving parts. All engines counterbalanced. No vibration. Special fuel injector burns gasoline, kerosene, coal oil, alcohol, naphtha distillate. Plastic white bronze bearings, no cheap babbitt used). Crank-shaft drop forged steel. Bearing surfaces ground. Adjustable steel connecting rod. Waterproof ignition system. For your launch, sailboat, rowboat, stern wheel boat or railroad track car. 20,000 satisfied users. Free catalog and testimonials. **Demonstrating Agents wanted in every boating community.** Special wholesale price on first outfit sold. [31]

DETROIT ENGINE WORKS
1236 Jefferson Ave., Detroit, Mich., U.S.A.

"THE STRELINGER"

For more than 12 years "THE STRELINGER," the old reliable 4-Cycle Marine Motor, has stood for the best in Marine Gasoline Engines. A distinct success. First quality in material and workmanship from flywheel to propeller. The MOST RELIABLE, DURABLE and ECONOMICAL Marine Motor made. The Engine that ALWAYS MAKES GOOD, because it is built right. Famous for endurance. Customers who bought the first engines write: "It is as good to-day as the day purchased; always goes, and never gives any trouble; have not spent a dollar for repairs." That is the engine you want.

January, 1910, we purchased the United Manufacturing Company's Plant and will continue the manufacture of the "LITTLE GIANT" 2-Cycle Marine Motors. We can furnish you Engines from 1½ to 60 H. P. Agents wanted. Send for free catalog to-day. Send 10c. for a nickel-plated pocket compass.

THE STRELINGER MARINE ENGINE CO.
No. 59 Congress Street East, Detroit, Michigan, U.S.A.

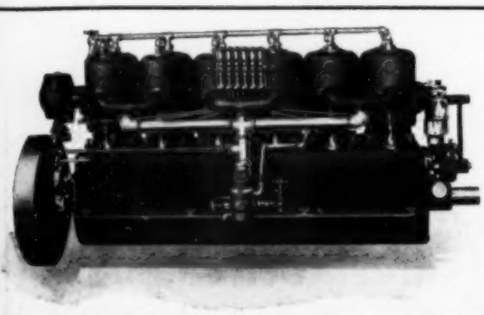
MILTON BOAT WORKS

BUILDERS OF ALL TYPES OF POWER BOATS, SAIL BOATS AND DINGHYS. MARINE RAILWAYS, REPAIRING AND SUPPLIES **RYE, NEW YORK**

New Stock designs of 20 and 25 foot semi-speed boats now ready with material and workmanship up to the usual high standard of our built to order boats. Knockdown frames of these can also be supplied

THE WISE MAN ORDERS NOW

Members of the National Association of Engine and Boat Manufacturers



DOMAN

"THE MOTOR OF QUALITY"

"Doman" Marine Motors and Engines are the product of a gradual refining process.

In their present state they approach the highest degree of development in the marine construction line.

Built in sizes from 5 to 200 H. P. 2 to 8 cylinders.

Write for our illustrated catalog which gives full information of what we make.

THE H. C. DOMAN CO., Dept. F. Oshkosh, Wis., U.S.A.
The High Grade Engine Builders
SEATTLE, WASH., STOCK BRANCH, 72 JACKSON ST.

The Famous
KING
MOTOR BOAT **OIL**
Will not carbonize. A perfect lubricant
GREENSLADE OIL CO.
DETROIT, MICH.

DON'T DISCARD BROKEN PARTS

Have them welded together by the Oxy-Acetylene Process. Steel, Cast Iron, Bronze, Copper, Aluminum and all other metals can be welded. Manufacturing quoted on. Welding equipments for repair shops or large plants supplied.

Autogenous Welding Equipment Company
41 Bay Street Springfield, Mass.

21½ REAL MILES PER HOUR WITH THE ATLANTIC GUARANTEE

"ELEKTRA." 25 ft. lo.g, 4 ft, 6 i.. beam

Mahogany Planked and Decked
Automobile Control

$1250.00

The Revillion Light Six-Thirty Engine
Six Cylinders. Constant Torque

If you want Real Speed

Specify this engine. A few and only a few will be sold to boat builders this year—not more than five in any one locality. Deliveries, one per day, from March 1st. **The first twenty are specified.** Act quickly. Catalog "R 4."

Here are a Few of the Good Points.—Reverse gear integral; Remy high-tension magneto; double ignition; Schebler carbureter; aluminum base; nickel steel drop forged crank shaft, oil treated; nickel babbitt, die cast, replaceable bearings; balanced pistons; eccentric turned rings; drop forged connecting rods; positive flushing lurication oil circulating pump; large valves in head; valve cage removable by loosening one nut.

THE PRICE IS THE SENSATION OF 1910

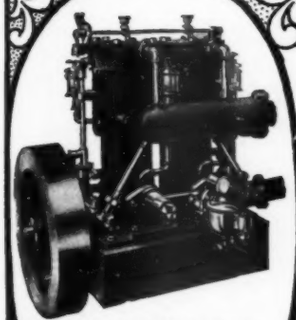
6-cylinder, 30 H. P
Light Six-Thirty
385 lbs.

4-cylinder, 20 H. P.
Light Four-Twenty
265 lbs.

$445.00 complete
$345.00 complete

THE ATLANTIC COMPANY **AMESBURY, MASS.**
New York: Room 612, 30 Church Street Boston: 93 Haverhill Street

The Royal Road to motor-boat efficiency is THE ROYAL ENGINE



Royal Double Cylinder Engin
Made in three sizes as follows:

H.P.	Bore	Stroke	Speed	Weight
5	3⅜	4	650	235
10	4⅜	5	630	375
15	5⅜	6	525	500

The Royal Engine—royal in name and royal in fact—it is the *first* in efficiency and power in gasoline enginedom—a ruler among its kind.

The Royal Engine has all of the *good* qualities of other gasoline engines, none of their bad qualities, and furthermore has several good qualities distinctively Royal.

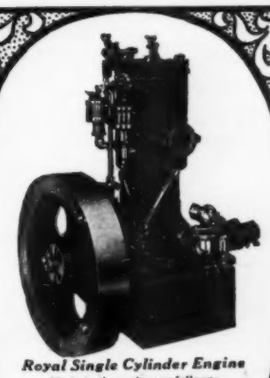
Two features alone which make the Royal Engine stand out above the mass of other motors are:

You can dismantle and get at any part of the engine in twelve minutes (other motors take hours to dismantle); and

The Ring Centrifugal Oiler, which solves the problem of lubricating, the most difficult and vital parts of a gasoline engine.

Write for Catalogue to

THE ROYAL ENGINE COMPANY
117 Housatonic Avenue, Bridgeport, Conn.



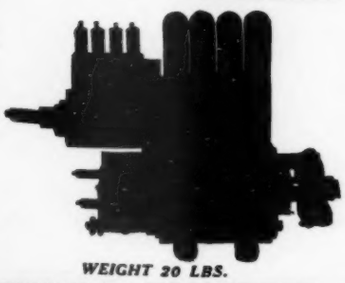
Royal Single Cylinder Engine
Made in three sizes as follows:

H.P.	Bore	Stroke	Speed	Weight
2½	3⅜	4	650	115
5	4⅜	5	630	220
7	5⅜	6	500	300

"WHITE" MOTOR & PADDLING CANOES are made of the best cedar, ribs and planking covered with canvas; spruce gunwales, white ash or oak stems and thwarts and brass-bang plates. The seams are beveled and lapped, making a smooth water-tight canoe, even before the canvas is put on. No cracks, no swelling or shrinking and the result is a stiff, strong, durable canoe. Ask for our descriptive booklet.

E. M. WHITE & CO.
OLDTOWN - MAINE

NEW HEINZE MAGNETO



WEIGHT 20 LBS.

will generate a large spark firing charges positively when cranked or running at a low speed.

At 50 R. P. M. will produce a ⅜" spark.

At 1,000 R. P. M. the primary voltage is 6.8.

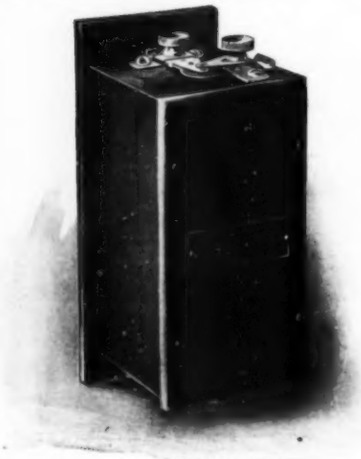
Its short circuit currents amount to 5.7 amperes.

All parts are waterproof.

Let us send you Catalog 8, giving full information.

HEINZE ELECTRIC COMPANY **LOWELL, MASSACHUSETTS**

OSBURN COILS



EVER been out in a storm in your boat or launch and had the engine stop because the coil failed to work properly? Not very pleasant, was it? OSBURN COILS won't fail you, no matter where you are. They use but a small amount of current—batteries last again as long. Vibrator is something new—fast, efficient, and cannot get out of adjustment.

Type O, shown above, furnished either in oak or mahogany. We make coils of every description—dash, round fibre case, and make and break.

Specify an Osburn Coil on your engine. We will guarantee it.

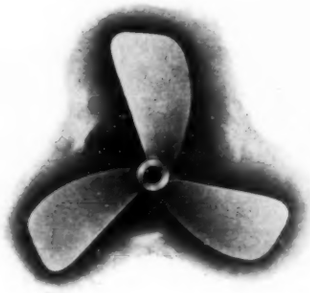
WE HAVE SOME INTERESTING PRICES FOR DEALERS AND MANUFACTURERS

WRITE FOR CATALOG

OSBURN ELECTRIC CO., 71 Fort St. E., Detroit, Mich.

THE BRYANT PROPELLER

EFFICIENCY



DURABILITY

REASONS:

Why our propeller will increase the speed of your launch over any other wheel made.

Our wheel is true pitch ¾ the length of blade, being differential at hub **overcomes all agitation at that point.** This design of wheel gives you a shearing cut from Hub to Periphery, thereby allowing the wheel to work full length of blade, and discharging the water in a tapered volume aft, gives you all the efficiency minus a small per cent. of slip, which can only be procured by a wheel of our design. The peculiar design of a wheel of this kind requires a metal that will hold its shape, and we have a metal as **"strong as steel."**

Money refunded if we do not increase the speed of your launch.

Write for a catalogue.

FRONTIER ENGINEERING COMPANY
836 Fort Street, West :: Detroit, Mich.

UPSON-WALTON QUALITY

Everything in the Marine Hardware and Supply Line for Launches, Yachts and Motor Boats.

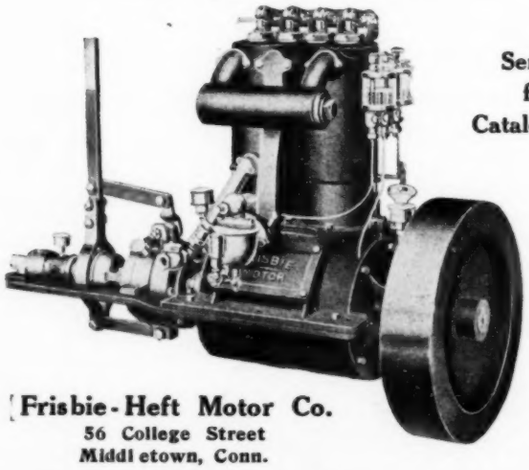
Catalogue with price list sent on request.

THE UPSON-WALTON CO.
ESTABLISHED 1871
CLEVELAND, OHIO

Frisbie Motors

4 cycle 3-60 H.P. 1-6 cylinders
"SIMPLEST OF ALL"

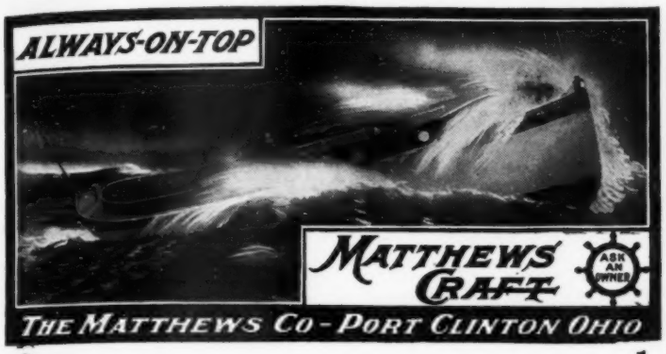
Efficiency, Dependability, and Low Cost of Maintenance Developed to the Utmost. Ideal Power Plants —— for Business or Pleasure ——



Send for Catalog

Frisbie-Heft Motor Co.
56 College Street
Middletown, Conn.

Boston Agents: American Marine Eng. Co., 27 Haverhill St.



THE MATTHEWS CO - PORT CLINTON OHIO

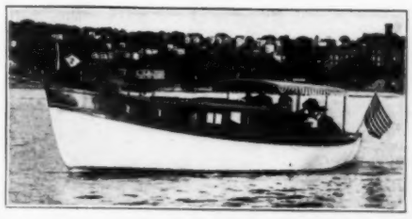
If a Power Cruising Yacht, we offer seventeen years of successful experience to back up our proposition to you. On request, we submit preliminary plans of your requirements, or estimate on any naval architect's designs. We protect you against loss or disappointment in motor or hull.

If a Runabout, we offer the best value, regardless of cost, on the American market.

26 Ft., 17 H. P., 3-cylinder, 2-cycle motor, speed 13½ miles	$1,300.00
26 Ft., 40 H. P., 4-cylinder, 4-cycle motor, high tension magneto, 18 miles . .	1,675.00
30 Ft., 40 H. P., 4-cylinder, 4-cycle motor, high tension magneto, 19-20 miles .	2,000.00

Do not delay. We have prepared to build one hundred of these runabouts (hence the price). Selling fast. Get your order in at once if you want one.

"Pioneer" In Boat Construction



Stands for Durability, Strength, Seaworthiness, Beauty and Economy

Pioneer Power Boats are in use in every civilized country. We will furnish you the **COMPLETED BOAT** with the engine installed, ready to run, **or you can BUILD IT YOURSELF.**

Pioneer Perfect Frames are the standard of the world. Each rib is bent to **exact shape, fitted and beveled.** Every frame is **set up, trued, tested** and absolutely **finished,** ready for the planking before being taken apart for shipment. We also furnish in addition when desired, everything to complete the boat. With the patterns and detailed illustrated instructions that accompany every frame, you can complete a perfect boat at an **astonishingly small cost.**

You can finish a **cabin cruiser** or a **working boat** as readily from **Pioneer Perfect Frames** as you can a small launch.

Send for our catalog, enclosing 10c. in stamps or silver to cover mailing cost. The most comprehensive book on boats ever issued, fully describing and illustrating 50 different models for both pleasure and commercial use.

PIONEER BOAT & PATTERN CO.
Box 431 BAY CITY, MICHIGAN

Packard

IGNITION CABLE

Solves the wiring problem on any motor boat so that it STAYS solved

THESE ARE THE REASONS *WHY:*

1. ***Highest Grade Materials*** that must meet electrical, mechanical and chemical specifications.
2. ***Superior Workmanship*** constantly checked up by the most rigid inspections.
3. ***Flexible Enamel*** which seals the rubber from heat, grease and oil.
4. ***Severe Electrical Tests*** by our own patented processes, insuring absolute freedom from failure.

INSIST on having your boat wired with *Packard Cable!*

WANT 3-COLOR BOOKLET?

THE PACKARD ELECTRIC CO.
322 Dana Avenue Warren, Ohio

Samson Tiller Rope

Solid braided cord with a wire cable centre. Made of extra quality stock, with smooth braid, thus avoiding the abrasion which destroys ordinary rough cord so quickly. Does not stretch, and is flexible and durable.

Furnished regularly in mahogany colored cotton, with a bronze wire centre. We also carry cord with a galvanized wire centre, and can furnish linen or Italian hemp cord if required.

We manufacture extra quality solid braid cord in all sizes and colors, and for all purposes.

Send for samples and catalogue.

Samson Cordage Works
BOSTON, MASS.

MORSS MARINE FITTINGS

have been the standard for over 60 years for

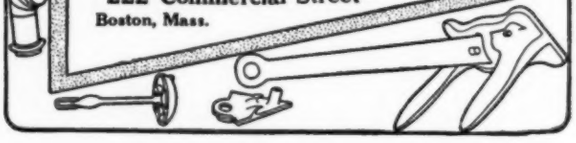
QUALITY STYLE PRICE

The entire line is shown in our Illustrated Catalog which we send free on receipt of 5 cents, for mailing. Send for it today. Write us about your requirements.

Electrical Goods
Propellers and
Shafting
Marine Specialties
Cavito Under
Water Exhausts

A. S. MORSS CO.

222 Commercial Street
Boston, Mass.



Every Sportsman Wants This Book

(The New T. & M. Book)

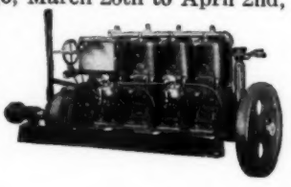
—it tells many things of utmost value to operators of marine gasoline engines.
—it shows the cup winners of many world-famed speed and endurance tests.
—it tells how the T. & M. Marine Engine has made good for over 15 years.

T. & M. Marine Engines

Whether you intend to buy a T. & M. Marine Engine or not, we want you to have this book. Just write us a postal. Say: "I want the T. & M. book." Our Accessory catalog also sent free on request.

See the T. & M. at the Boat Show!

T. & M. Marine Engines will be on exhibition at the 1910 National Motor Boat and Engine Show, First Regiment Armory, Chicago, March 26th to April 2nd, Space No. 3, main floor, to left of entrance.



Termaat & Monahan Company
Dept. C
Oshkosh, Wisconsin

(6)

Buffalo's Classic Indoor Exhibition

THE THIRD ANNUAL

Power Boat

AND

Sportsmen's Show

The comprehensiveness in display of Power Boats, Marine Engines, Accessories, Motorcycles, Athletic and Sportsmen's Equipment will make it one of the chief events of its kind in the country.

The consensus of opinion on last year's show was that "A handsomer and more attractive decorative scheme had never before been devised" and that the attendance was without question a class that merited the exhibit of the most conservative.

THE BUFFALO LAUNCH CLUB

Promises to eclipse all previous achievements this year

COME AND SEE FOR YOURSELF
ONLY LIMITED AMOUNT OF SPACE OPEN
GET BUSY—DON'T MISS IT

THE DATE THE PLACE
March 21-30, 1910 - - Convention Hall

DAI H. LEWIS, Manager
760 Main Street, Buffalo, N. Y.

CHICAGO
NATIONAL
MOTOR BOAT
AND
ENGINE SHOW

SANCTIONED BY
National Association of Engine and Boat Manufacturers

1st Regiment Armory
16th STREET AND MICHIGAN AVENUE

MARCH 26th to APRIL 2nd, 1910

Space Being Rapidly Taken

Write for Application Blanks

Address all communications and applications to

CHESTER I. CAMPBELL
GENERAL MANAGER
Executive Offices: 5 Park Sq., Boston, Mass.

FOX MOTORS

Hold the World's Endurance Record 1554 Miles Cincinnati, O. to New Orleans, La., at an *average speed of 29.08 miles* per hour.

"When You Buy a Motor Get a Good One"

Fox Motors combine *all* the qualities that go to make up a motor that can be depended upon under *all* conditions.

They have two special exclusive features

The Fox Fourth Port Accelerator

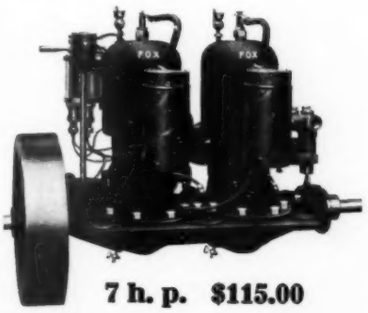
A new patented device which produces a perfect mixture, increases the power and reduces fuel consumption in a truly wonderful manner.

The weight of engine in proportion to power delivered is much reduced.

The Fox Carburetor

is mechanically correct both for high and low speeds. Must be seen and used to be appreciated. No springs. All working parts and areas accurately machined

Fox Motors are always sold subject to 30 days' trial in your own boat and a year's guarantee. Your money's worth or your money back.



7 h. p. $115.00

FOX SPECIALS: Second Call

As announced, we are selling until May 1st 1000 Special Motors at Introductory Prices:

3 1-2 h. p. Single Cylinder at $55.00

7 h. p. Double Cylinder at $115.00

Don't miss this chance, for this offer is a Bargain for you and Advertising for us. Remember we build all sizes 3 1-2 to 80 h.p. one to eight cylinders. Write for our printed matter.

THE DEAN MFG. CO.

262 Front St., "South Cincinnati" Newport, Ky.

LIGHT IN WEIGHT
EFFICIENT IN OPERATION
DURABLE IN CONSTRUCTION

The Ignition system for the Motor Boatman who Operates His Own Boat.

The Motor Boatman with a motor of high power demands an ignition system that will be free from difficulties, that will develop the full power of his engine and that will give uniform and constantly satisfactory service under all conditions.

Cheaply constructed magnetos fail at the moment when good service is most needed. The Dow Perfected Magneto is assembled to run as long as the motor itself. Special construction entirely prevents burned coils, dirty distributer contacts and defective interrupter points. Perfection of adjustment affords practically unlimited life to the running parts.

With no other attention than a few drops of oil every two or three months the Dow Perfected Magneto will give years of perfect service.

DOW

PERFECTED MAGNETO

THIRTY DAYS TRIAL and an UNLIMITED GUARANTY are the terms under which a Dow Magneto is sold. These offers are bona fide and the Guaranty is protected only against sledge hammer methods and amateurish curiosity.

Dow Ignition Accessories set the standard for durability and good service.

If you use a Coil Ignition System the Dow Spark Coil will give you increased power and a cleaner motor. Dow Coils give a hotter spark with less current consumption than any other coil made.

The Dow Perfected Kick-Off Switch for dual systems and the Dow Primary Switch for coil systems are the most satisfactory switches that can be made. Send for details regarding the locking Kick-Off Switch.

We have made a detailed study of Ignition Difficulties and how to overcome them. Write for Important Ignition Facts.

DOW MANUFACTURING CO.

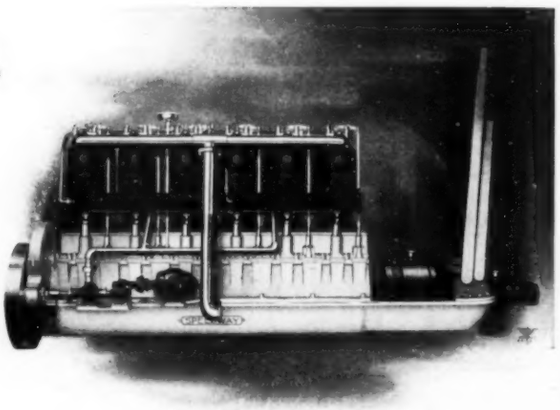
Braintree, Mass.

"SPEEDWAY"

means marine gasoline engine efficiency. A strictly high-class up-to-date all around motor for cruising, speed or commercial boats, four cycle type, 8 to 150 H. P. in stock. Hundreds of them in successful operation in all parts of the world.

GAS ENGINE & POWER CO.
AND
CHARLES L. SEABURY & CO.
CONSOLIDATED
Morris Heights, New York City, New York

Designers and Constructors of High Class Craft of All Sizes and Styles for Pleasure or Commercial Service.



"Seabury" Water Tube Boiler and Marine Engines

THE ONLY NAPHTHA LAUNCH

Send 10 Cents for New Catalogue

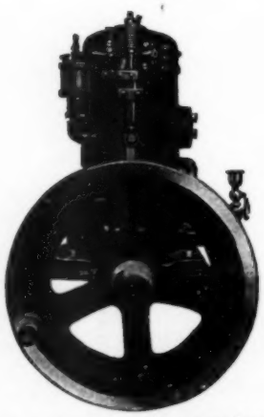
THE "KENNEBEC"

Sturdy Enough for the Fisherman

The fisherman, who goes out in any and all kinds of weather, day and night,—winter and summer,—puts his engine to the severest test possible.

His very livelihood depends upon the reliability of his motor, and he MUST have an engine upon which he can depend at all times and seasons, and under all conditions.

Do you want a better recommendation than this for the engine for your Motor Boat?



Handsome Enough for the Finest Pleasure Boat

Remember, Mr. Boat-Owner, that while you do want an engine upon which you can depend, and which will stand up under all possible hard knocks, you do not want a rough looking, uncouth mass of metal to put in that handsome new boat of yours, and just because the KENNEBEC stands hard usage and exacting conditions, do not fancy it is a "rough jewel." It runs more smoothly and is the most completely equipped motor that you have ever seen, splendidly finished and in any size exceeds its rated horse-power from thirty to forty per cent.

Ask the Fishermen what they think of the "KENNEBEC" ENGINE

Write for Catalog R

Manufactured by TORREY ROLLER BUSHING WORKS, BATH, MAINE

NEW YORK AGENTS:

THOS. I. SIMPSON & CO., 68 South St.

ALL GOODS MADE IN OUR OWN FACTORY

OUR SPECIALTY

COMPLETE ELECTRIC LIGHT OUTFITS
SEARCHLIGHTS ETC.

THE RICHARDSON ENGINEERING CO. HARTFORD, CONN.

14 & 18 IN. PROJECTORS

MARINE ELECTRIC LIGHT OUTFITS $150 UP
STATIONARY ELECTRIC LIGHT OUTFITS $262 UP

SOMETHING NEW—A REAL ARC SEARCHLIGHT 6 in. diameter
For $70. Ask for discount

It will throw a piercing, bright, white light 1-4 mile. Not a toy. Built like our larger ones with automatic shunt feed and automatic focusing. Requires but a small dynamo to run it.

THIS IS THE LATEST AND BEST ON THE MARKET

We have a new catalogue No. 38, ask for it

If you are interested in any of our goods ask for literature on special ones you want, as we have 8 publications.

The Richardson Engineering Co., Hartford, Conn.

AUTOMATIC STORAGE BATTERY CHARGING BOX OUFITS $70 UP

ELECTRIC SHIP TELEGRAPH OR ENGINE ROOM SIGNAL

COMPACT DOME OR CEILING LAMPS

AUTOMATIC STORAGE BATTERY CHARGING SWITCHES

GENERATING UNITS GASOLINE & STEAM 1 TO 100 H.P.

6" 7" ARC SEARCHLIGHT

9" PILOT HOUSE CONTROL SEARCHLIGHT

SPECIAL MARINE STORAGE BATTERIES

The Richardson Engineering Co. HARTFORD, CONN.

COMPACT YACHT FIXTURES

MULLINS STEEL BOATS

THE BEST BOATS BUILT

That is a big claim — but it is true. Mullins Steel Motor Boats are faster — safer — more durable and better value than any other boats of the same size and horsepower. The best boat is the one that gives the greatest satisfaction—thousands of Mullins Steel Boats are in use all over the world and are giving perfect satisfaction to their owners. We will gladly send you the names of men who own Mullins Boats. Ask their opinion.

Mullins Steel Boats Can't Sink

They have air chambers in each end exactly like a life boat, making them absolutely safe in all weather. Mullins Steel Boats are also **cheapest to maintain** because the steel hulls cannot split, crack, warp, dry out, open at the seams or become waterlogged. You get "A new boat every season for the price of a coat of paint."

WRITE FOR OUR FREE CATALOGUE TODAY

that explains fully the many exclusive improvements of Mullins Steel Boats—the new Mullins Two Cycle Engine, that is guaranteed not to back-fire or "stall"—Mullins Silent Underwater Exhaust—One Man Control—Improved Carburetor—Rear Starting Device—Automobile Seat—Steering Wheel, etc., and gives complete specifications of our Seven Unequaled Models (16, 18, 20, 22, 24 and 26 ft.) and complete line of Launches, Row Boats, Hunting and Fishing Boats, Marine Engines, Accessories, etc.

THE W. H. MULLINS COMPANY

182 Franklin St. Salem, Ohio, U. S. A.

The Largest Boat Builders in the World

Ask The Man Who Owns One

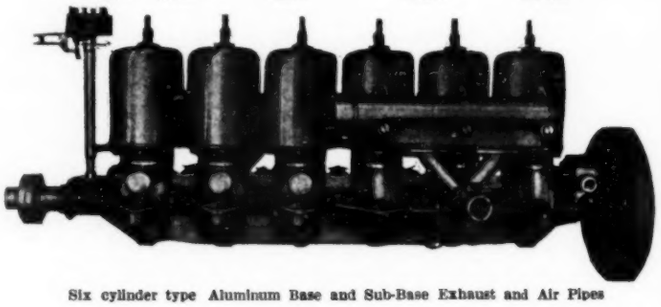
"MASCOT"
Owned by E. Corsepius, Fort Madison, Iowa, equipped with 6 Cylinder Pierce-Budd Co. engine—speed much over 30 miles per hour.

These are some of the owners—E. Corsepius, Fort Madison, Iowa, Fred B. Smith, Terre Haute, Ind.; Capt. Wm. Rattray, Marine City, Mich.; A. Arnold, Jr., Bay City, Mich.; Minn. Boat and Power Co., Stillwater, Minn.; Dr. O. B. Monosmith, Lorain, O.; S. P. Pankost, Sacramento, Cal., and many others.

The following boats all over 30 miles per hour are equipped with our 6 cylinder Engines; "Mascot," "Coyote," "102," "Teddy II," "Evangeline," and another just finished before close of navigation which made 33 miles per hour.

1910 TYPES

	4 to 6 H. P.	12 to 15 H. P.	18 to 25 H. P.	40 to 60 H. P.
	1	2	3	6 Cylinders
Weights	116 lbs	170 lbs	217 lbs	390 lbs
Price	$155	$295	$450	$1072



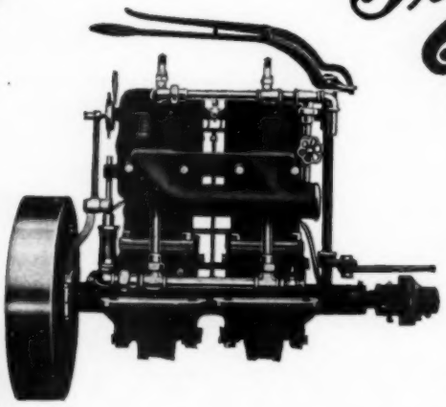
Six cylinder type Aluminum Base and Sub-Base Exhaust and Air Pipes

Strong—Simple—Durable. Made from best material attainable—by motor experts.

Best equipped Engine in the world. Send for new 1910 catalog.

PIERCE-BUDD CO., Marine Motor Manufacturers
205-219 Saginaw Street, Bay City, Mich.

Tuttle



More than 18 Years of Experience and Development are Represented in Our 1910 Models

THEY combine every well-known feature in up-to-date construction, united with the incomparable simplicity, strength, speed and endurance, which have made Tuttle Engines unique and several years in advance of all competitors.

They are Guaranteed for an Indefinite Time.

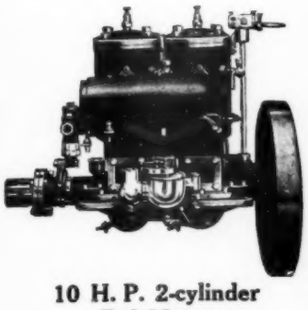
You can now purchase a Tuttle Motor for from 20 to 30 per cent less than heretofore,

because we have done away with the old-time method of selling through salesmen and have adopted an up-to-date plan of dealing direct with purchasers.

All commissions having been deducted you can now equip your boat at an extremely low cost. Write for catalogue and full information. It will pay you.

D. M. Tuttle Co., 34 Holden St., Canastota, N. Y.
Boston Office: 70 Long Wharf

ERD MARINE MOTORS



10 H. P. 2-cylinder Erd Motor

Hundreds of the most prominent Motor boat men in the world have declared Erd Motors to be the most powerful and reliable Motors on the market.

We guarantee Erd Motors to work perfectly in your boat or refund you your money.

Speed Boat "ERD" doing 30.25 miles per hour, equipped with a six-cylinder 5x5 60 H. P. Erd Motor.

Two-cycle Motors manufactured in sizes from 3½-60 H. P.
Four-cycle " " " " 12-40 H. P.

Write to-day for our 1910 catalog, No. 47. State what size boat you have. We will be glad to tell you frankly what speed you will obtain by installing an ERD MOTOR.

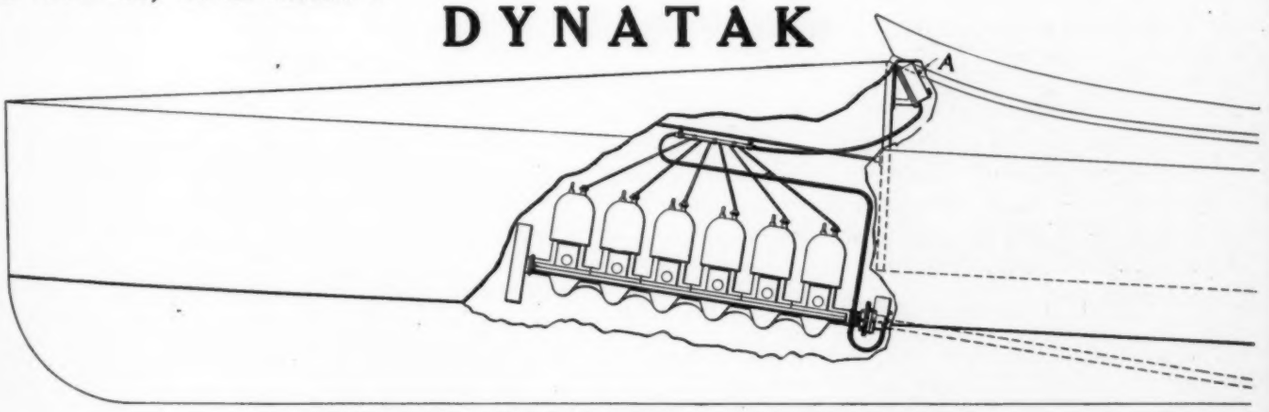
ERD MOTOR CO., Inc., Saginaw, Mich., U. S. A.

Do You Want to Know

What the cylinders of your engine are doing separately or together?
Which, if any, cylinder is missing?
Your power and the conditions under which your engine is doing the most useful work?
How to adjust your carbureter perfectly when the engine is idle as well as under load?
The revolutions per minute of your propeller in aeroplane and marine work?

If You Do, Then Install a

DYNATAK



SEE OUR EXHIBIT AT NEW YORK SHOW OR WRITE FOR CATALOGUE

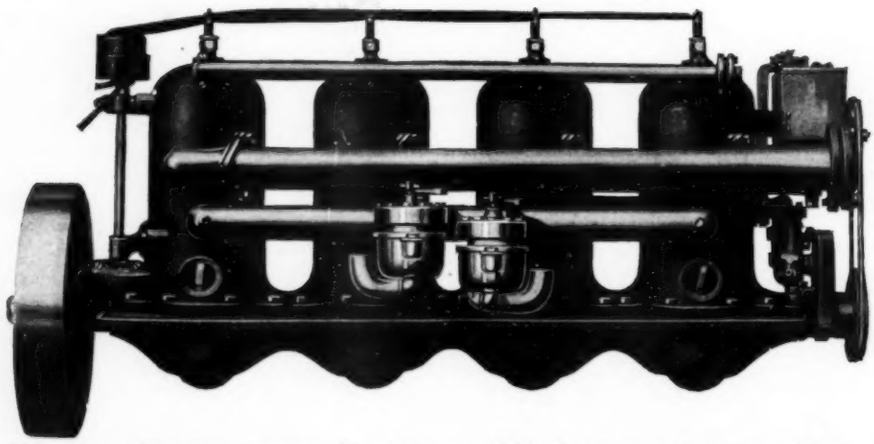
THE ELECTRIC SPEEDOMETER AND DYNAMOMETER MANUFACTURING COMPANY

1317-1319 NEW YORK AVENUE - WASHINGTON, D. C.

Combination Dynamometers and Tachometers

Precision Electric Tachometers ***Dynamometers***

No speed engine approaches this in ability for the severest tasks



Four-cylinder new Extreme High Speed Vim Motor

Bore and stroke—5 x 5 inches
3-cylinder—35-40 H. P.
4-cylinder—40-55 H. P.

Bore and stroke—4 x 4 inches
2-cylinder—12-15 H. P.
3-cylinder—19-23 H. P.
4-cylinder—26-31 H. P.

VIM MOTOR

The most perfect two-cycle motor made

In evolving the new extreme high speed Vim Motor—conceded to be the most wonderful marine engine ever produced—we have achieved an end hitherto considered impossible.

We have gone a long step farther than the perfection of an engine serviceable merely in speed work.

We have produced an engine of extreme high speed—an engine which actually delivers more power, for size of bore and stroke, than any other marine motor in the world—and with this wonderful speed and power we have combined a strength and durability not to be had in any other engine.

It is a fact that this new Vim, with all its tremendous speed and power possibilities, will withstand three to six times more hard work than could be imposed upon the ordinary speed engine.

This new Vim is strong and staunch.

It is not over-heavy; neither has weight been sacrificed to the point where strength is impaired.

The secret of the new Vim's great power and exceptional speed is found in the fact that it is built on the valveless, two-cycle principle, and the further fact that it is the most perfect development of this ideal gas engine theory.

Get in touch at once with the details of the new extreme high speed Vim and the other Vim types for speed and heavy duty.

THE VIM MOTOR MANUFACTURING CO.

440 Market Street, **SANDUSKY, OHIO**

Representatives:

Southwestern New York, Connecticut and Northwestern New Jersey: Otto Gas Engine Works, 136-138 Liberty St., New York
Portland, Me.: G. D. Thorndyke Machine Co. **Philadelphia: W. S. Carman, Bourse Bldg.** **Baltimore, Md.: F. B. Burton**
Northwestern Washington: Marine Construction Co., Tacoma **Montreal, Ont.: I. L. LaFleur, Ltd.**

Some DURKEE Specialties

FOR YOUR MOTOR-BOAT

The New Durkee Bilge Pump

(Patent Pending)

is a distinct improvement over the other kind which looks so much like it. The length of hose which serves as an in-take allows the foot rest of the pump being placed on a locker, seat or deck, which means that the operator is not obliged to put a twist in his back to clean out every drop of bilge water. For washing decks and cleaning off an anchor on moderate-sized craft, the ease by which the in-take hose may be dropped overboard while the operator is standing on the deck is a mighty taking feature.

THE NEW DURKEE BILGE PUMP

The Durkee Wheel Control

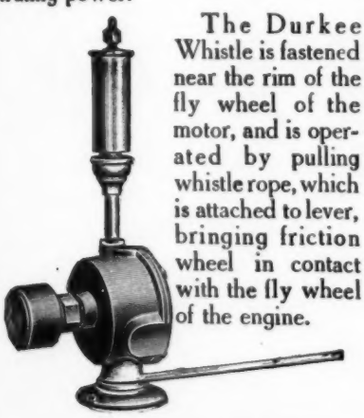
The Durkee Wheel Control gives one person complete control of the boat, just as a similar method gives the driver complete control of an automobile.

The spark and throttle levers are situated within the rim of the steering wheel.

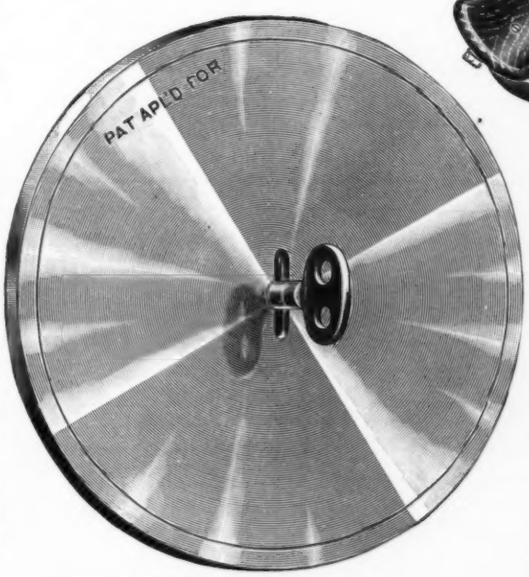
This method of control is the most satisfactory way of keeping in the hands of one person the operation of a motor boat.

The Durkee Power Whistle

gives a long, continuous blast or a series of short, sharp blasts--- at will --- and has great distance and penetrating power.



The Durkee Whistle is fastened near the rim of the fly wheel of the motor, and is operated by pulling whistle rope, which is attached to lever, bringing friction wheel in contact with the fly wheel of the engine.



THE DURKEE PATENT THIEF-PROOF DECK PLATE

The Durkee Patent Thief-Proof Deck Plate

There are two ways to open it---by a key or a jimmy. The fellow who steals gasoline can't follow this calling if you have one of these Deck Covers. You have the key. He may have a jimmy, but to work a jimmy makes a lot of noise.

THE DURKEE PATENT KEYLESS DECK AND HAND HOLE PLATE

The Durkee Patent Keyless Deck and Hand Hole Plate

The Cap of this Deck Plate may be inserted without the use of a key of any kind. Instead of a thread to hold it in place, a couple of springs, actuated by studs in the flange of the cap, fit into a groove in the plate, and it may be inserted or removed instantly. This plate, in the 4-inch size, makes a particularly good hand-hole plate for covering the supply valve at the gasoline tank, which in many open craft can be approached only by removing the portable bulkhead.

C. D. DURKEE & CO., 2 South St., New York

The Very Latest Thing in Up-to-Date TOILET FITTINGS

OL-SE-CO Automatic Liquid Soap Jar

FOR USE ON YACHTS AND MOTOR BOATS

No. 1
Price, $2.00.—Press the BUTTON and it flows into your HAND

The Automatic Jar and the Modern Way to Use Soap

Philadelphia, Pa., 1, 19, '09.

SAPONOL CHEMICAL CO.,
130th St. and Park Ave.,
New York City.

For 15 years the writer has been endeavoring to secure a soap which would remove the grease and other grime inseparable from the engine room.

In OL-SE-CO you have evidently a happy combination. It not only absolutely removes this dirt, but leaves the skin soft and pliable. As stated above I have seen nothing which can compare or be classed with it. What surprised me was that a delicate toilet article like OL-SE-CO would so effectually remove the hardest and stickiest accumulations of dirt that is encountered (that of the engineer). I have enjoyed the many benefits of OL-SE-CO and cannot recommend same too highly.

JAMES BRYSON,
Chief Engineer.

No. 4
Price, Complete, $4.00

No. 4 is a Combination Fixture made of brass heavily nickeled or oxidized, with drinking glass, screws, etc., ready to be placed in position. The pictures show the device; it is made of heavy glass and nickel-plated metal, indestructible, neat, serviceable. No modern boat is complete without it.

OL-SE-CO is a pure, delicate, antiseptic toilet soap, in liquid form, made from pure olive oil and c. p. glycerine. Efficient in fresh or salt water. Always a supply of Pure, Clean Soap—no waste. A handsome Toilet Fixture. Write for descriptive booklet.

The Most Convenient and Sanitary Way to Have Your Soap is in a Sprinkler Top Can

Put it in your grip, tool bag or box.
You will find it handy and clean.
For shampooing it is just what you want.

DIRECTIONS

Rub OL-SE-CO into the skin thoroughly, which will dissolve the grease, grime, dirt or dandruff; then rinse with water, hot or cold.

"That's All."

AUTO-CAN

Filled with Ol-se-co, 35 cts.

Order of your dealer or will be mailed by us direct upon receipt of 35c. in stamps.

SAPONOL CHEMICAL COMPANY

PARK AVENUE and 130th STREET, NEW YORK CITY

Gritless, Dripless GRAPHITE LUBRICANTS

ORDINARY oils and Greases are SOMETIMES efficient. Graphite Lubricants—if correctly prepared—are ALWAYS efficient. U. S. G. CO.'S MEXICAN GRAPHITE CUP GREASE is carefully and scientifically put together and contains just the correct proportion of finely POWDERED graphite, air-floated, absolutely gritless and for lubricating purposes very superior to the "flake" graphite used in similar preparations. Will not gum, harden or dry up, and retains original consistency in all temperatures.

MANUFACTURED BY

THE UNITED STATES GRAPHITE COMPANY

General Offices & Factory, SAGINAW, MICH.

Branches: NEW YORK, PHILADELPHIA, PITTSBURG, CHICAGO, DENVER and SAN FRANCISCO

Sold by

C. D. DURKEE & CO., 2 and 3 South Street, NEW YORK, N. Y.

C. A. FORKER & CO.

MANUFACTURERS AND DEALERS IN

FLAGS

U. S. JACKS	YACHT ENSIGNS
BURGEES	U. S. "
BANNERS	FOREIGN "
BUNTINGS	SILK "
YACHT SIGNALS	U. S. PENNANTS
RAILROAD "	DRESS FLAGS
CODE "	FLYS
WEATHER "	STREAMERS

Best Workmanship and Durability Guaranteed

ESTIMATES FURNISHED FOR EVERY DESCRIPTION OF BEST QUALITY FLAG WORK

47 WARREN ST., - NEW YORK CITY, N. Y.

WE CARRY ABOVE GOODS IN STOCK—
SEND YOUR ORDERS TO US

C. D. DURKEE & CO.
2 & 3 SOUTH ST., NEW YORK CITY

"VULCAN"

STA-RITE
"STAYS RIGHT THE LONGEST."

SPARK PLUGS

are guaranteed. We agree to place in as good working order as when new, any "STA-RITE" Ignition Plug AT ANY TIME when returned prepaid to our factory—FREE OF CHARGE.

"Vulcan" Type of "Sta-Rite" Porcelain Ignition Plugs

Double porcelain. Easily separable. The contraction and expansion is uniform, the porcelain cap protecting the inner heated tube. Practically no breakage or leakage with "Vulcan" Sta-Rites.

No. 4A. Half-inch (pipe thread), ¾-inch long over threads.

No. 6A. Metric.

No. 8A. A. L. A. M., ¾-inch, 18 threads.

No. 15A. Half-inch long, 1¾-in. long over threads. Porcelain tube, complete with bolt, packings, nuts and porcelain cap for any size plug. Price 50 cts.

Price, any size plug, net, $1.00

"Venus" Type of "Sta-Rite" Mica Ignition Plugs

All "Venus" Sta-Rite Mica Plugs are constructed with solid bolts from Bessemer steel rods, which do not stretch, and mica does not loosen. The inner India mica core is made with no shellac or other sticking substance. The perfect mica washers are compressed under great pressure, and machine turned to a finely glazed surface which, with ample air space, is practically soot and water proof, and cannot be broken in service.

No. 28A. A. L. A. M., ¾-inch, 18 threads.

No. 32A. Half-inch (pipe thread), ¾-inch long over threads.

No. 48A. Metric, copper gasket spun over shoulder.

Mica Insulator, complete with bolt, nuts and bushing. Price 50 cts.

Price, any size plug, net, $1.00

"VENUS"

THE R. E. HARDY CO.
(Incorporated 1900)
1735 Michigan Ave., Chicago, Ill.

HIGH GRADE

SPARK COILS

of Every Description

A guarantee for one full year's usage and of greater economy and longer service than any other coil, goes with all New York Spark Coils.

SINGLE BOX COIL

New York Spark Coils

The New York Coil Co. is one of the oldest spark coil manufacturers in the United States.

Long years of experience has taught this concern to make coils that are universally recognized as the standard of the world.

Spark Coils of every kind for every kind of use—for motor boats and automobiles—for 1, 2, 3, 4 and 6 cylinder motors—Dashboard Coils and Box Coils—made in interchangeable units. Send for complete catalogue of these famous coils.

MIDGET BOX COIL

NEW YORK COIL CO.
338 PEARL ST. - NEW YORK CITY

EVERY year since you have had your boat you have wanted a big whistle. For the last year or two the law required a whistle on every boat, but even without this requirement you have realized that it was unsafe to navigate with no means of signaling—unsafe for your fellow boatmen—unsafe for yourself.

A whistle costs less than a fine.

But, aside from the fine, you are not a first-class seaman if you can't let the other boat know what course you are taking. You are subjecting everyone on your boat, and every fellow boatman, to an unnecessary risk.

What signal shall I buy?

Electric buzzer, compressor or Watres system—these are the choice. Just now the electric buzzer in one form or another is attracting attention. The screech is ear-splitting to those on the boat, but its tone does not carry far—about one mile is the limit—this because there is no power behind it. And they eat batteries something terrible. Compressors blow a whistle, but the compressor itself is a brake on the engine to just the amount of the pressure accumulated.

The Watres system is just a powerful, deep tone steam whistle that will carry *five miles*, blown by burned gas. Every ocean liner, every big yacht has a steam whistle. It is the standard, seamanlike signal the world over.

It costs nothing for maintenance.

The Watres system has the advantage of costing nothing for maintenance either in batteries or in power. The valve, attached at the priming cup opening of the engine, has a passage of 1/100 of an inch; too little to affect even a one horse engine by a single revolution.

The Watres is automatic.

The Watres whistle is always ready. Even weeks after the engine stops, pressure is held in the reservoir, and an echoing blast awaits a pull on the cord. In operation, when the pressure of the engine is once attained, the valve closes. It is impossible for the pressure to go higher by a single pound. There is no spring to lose its temper so that the Watres system is as safe five or ten years from today as it is today. At the Boston Show, Watres enthusiasts told about their whistles having been in use for *five years* and now as efficient as ever.

The cost of the Watres.

So, when you consider the price of the Watres whistle, you will realize that it is not for this year or next year, but that it will last as long as the boat lasts and then be ready for the new boat.

The prices of the Watres equipments are $17.50, $25 and $35 each, with appropriate equipment

Our guaranty.

The guaranty of every Watres Whistle is short and simple—one month's use and then your money back if you are not satisfied—no question, no argument.

If you haven't had our booklet, send for it while the matter is fresh in your mind.

WATRES MANUFACTURING CO.
50 B CHURCH STREET, NEW YORK

WE CARRY ABOVE GOODS IN STOCK—
SEND US YOUR ORDERS

C. D. DURKEE & CO.
2 & 3 SOUTH ST., NEW YORK CITY

Puts Fire Out

Instantly—no matter whether it is gasoline, oil, or the most inflammable thing known.

"PYRENE"

It will even put out an electric spark.

You should have one in your boat or auto—hundreds of other owners have. It is approved and used by the New York Fire Department and in the United States government service.

Pyrene is a chemical fire extinguisher that will not freeze, never loses its strength, will not injure anything it is thrown on, requires no attention or recharging until entirely used, instantly *smothers* any kind of fire, and is absolutely a non-conductor of electricity.

Pyrene Manufacturing Co.

34 West 33d Street **New York City**

COLUMBIAN Yacht Rope is manufactured especially for use on private Yachts and Motor Boats, where fine appearance is second only to utility. It is made of carefully selected fibre of a brilliant color and exceptional strength. It pleases the most particular yachtsman in every way.

The COLUMBIAN Trade Mark on Yacht rope is your assurance of complete satisfaction.

Insist on having COLUMBIAN this year.

COLUMBIAN ROPE CO.

Mfrs. of all kinds of Cordage

Auburn, N. Y.

New York Office, 62 South Street

"INSTINT"

(Trade-Mark)

Varnish and Paint Remover

The Remover that Removes

If you have old coats of varnish or paint to remove, don't shop or waste time, but use

"INSTINT"

At leading ship chandlers from coast to coast.

"LUSTROGEN"

Aluminum Paint

(Trade-Mark)

READY MIXED
MARINE BRAND
FOR SEVERE EXPOSURE

The standard of quality for ten years.

Always ready to use---no mixing---just stir. Wears longest when applied. Does not deteriorate in stock.

MANUFACTURED BY

PERRY-AUSTIN MFG. CO.

GRASMERE, STATEN ISLAND
NEW YORK CITY

If You Have An

Auto Or Motor Boat

YOU MUST USE

SOLARINE METAL POLISH

To Polish the Metal Trimmings—**SOLARINE** works like Magic---It does not varnish over---It does not seek to add its lustre by covering up spots and tarnish, but by cleaning, brightening and bringing out the BEST that is in the metal itself. Solarine lustre is LASTING though easiest and quickest produced.

There is nothing else like SOLARINE
So there can be nothing as good.

Put up in screw top cans from one-sixth pint to gallon. "Every drop a shine." Either Black or White color.

WE CARRY ABOVE GOODS IN STOCK—SEND US YOUR ORDERS

C. D. DURKEE & CO.
2 & 3 SOUTH ST., NEW YORK CITY

"BRIDGEPORT BRONZE"

Time has proven it a success *and,* has also produced many imitations. Ten years have proved the worth of

BRIDGEPORT BRONZE

OUR FAMOUS STAMP

We guarantee to refund the amount of this bill, if at the end of the season there is any sea growth on the bottom of the boat, on which two coats of our B. B. paint has been properly applied.

OUR FAMOUS STAMP

The Bridgeport Bronze Marine Paint Company

It stands one year without growing grass or barnacles. It gives a racing finish as fast as pot lead.

BRIDGEPORT BRONZE MARINE PAINT COMPANY

BRIDGEPORT, CONN. Cable address " Lacquero Bridgeport "

THE "YANKEE" SILENT MUFFLERS and WHISTLE OUTFITS FOR BOATS

YANKEE MUFFLER

"Yankee" Muffler. Pat'd Aug. 31, 1909.

See that your engine is equipped with the "Yankee" Muffler. Over 120,000 in use. Made of heavy galvanized iron, riveted seams, asbestos lined, water cooled, no parts to become clogged or work loose. Light in weight. The only muffler made that will take care of any gasoline engine without back-pressure, and is absolutely silent at all speeds. Furnished to leading manufacturers of marine engines. The "Yankee" Whistle Outfit fills every requirement of the law. No power from engine. Made in various sizes. Money and transportation charges promptly refunded if not satisfactory after 30 days' trial. Write for catalog and prices.

For sale in New York by Durkee & Co., 2 South St.; E. J. Willis Co., 8 Park Place; Chas. E. Miller, 97 Reade St. Philadelphia: W. S. Carmen, Bourse Bldg. Chicago: Bullock-Waite Co., 86 E. Lake St. Detroit: H. D. Edwards & Co. San Francisco: California Gas Engine & Supply Co. Canada: Canadian-Fairbanks, Montreal and Toronto.

MANUFACTURED ONLY BY THE YANKEE CO., Box B, Utica, N. Y., U. S. A.

THE PREMIER YACHT WATER CLOSET

Very Highest development of marine water closets for use above or below water line, 4 inch cylinder discharges contents at third stroke, suitable for heavy work or owner's room. Will outwear any other closet, the gear makes it very easy working.

J. H. CURTISS CO.
2 SOUTH ST., NEW YORK

It is quite natural that the largest marine supply house in the United States should issue the most complete catalogue.

The catalogue of Charles D. Durkee & Co. contains nearly 500 pages.

It has an index of thirteen pages of solid seven point type, in which are listed over 2000 different kinds of marine supplies and many more thousands of items.

The catalogue describes each article fully and contains over 2000 illustrations.

Such a catalogue is a complete, exhaustive dictionary of the marine supply trade. It is a perfect reference book.

A copy of it is almost as necessary to every dealer and motor boatist as fuel is for the motor.

WE CARRY ABOVE GOODS IN STOCK— SEND US YOUR ORDERS

C. D. DURKEE & CO.
2 & 3 SOUTH ST., NEW YORK CITY

200 Automobile Catalogues in One Free

MoToR's Motor-Car Directory contains the complete specifications and illustrations of every automobile made or sold in this country.

It contains the synopsis of the catalogues of 200 automobile manufacturers.

It is printed on coated paper, thereby perfectly showing up the hundreds of cars illustrated.

It is solidly bound in cloth, in size and appearance to suit your library shelves.

It is the kind of a book, in its mechanical perfection of printing, paper, illustration, and usefulness, that ought to sell for at least $3—but we offer it *free* with a year's subscription for MoToR, the National Magazine of Motoring.

MoToR is recognized the world over as the great authority on Automobiles and Automobiling. If you want the best you want MoToR.

MoToR is for everybody interested in motor cars—either as a prospective buyer or as an owner of a motor car.

No matter what information you want about motor cars—their parts or accessories—it is the most reliable source.

MoToR's editorial pages contain everything of interest to the motorist ——descriptions of cars, parts, accessories, etc., touring articles, useful information—all attractively illustrated with pictures that illustrate.

MoToR's advertising pages are just as important to the reader, particularly to the prospective buyer, as the text pages. And who—veteran or novice—is not a prospective buyer?

You can get *now* this great magazine for its regular price—$3—and *free* MoToR's Motor-Car Directory—if you send in your subscription for MoToR today.

Don't delay sending for the Directory—putting it off only a day may find the limited *de luxe* edition of the Directory completely exhausted.

Today—NOW.

MoToR

1789 Broadway, New York City

For all the joy there is in it—Go A'Boating in a Pierce

It's the only way to realize to the fullest extent the pleasure of motor boating.

For Every Pierce Boat is Propelled by a Famous Pierce Engine. Quiet, speedy, dependable and economical in operation. The engine that at high or low speed, runs steadily and easily without that throbbing and jarring that is such an unpleasant feature of less perfectly constructed motors. For 25 years Pierce Engines and Pierce Motor Boats have been recognized by expert motor boatmen to be the world's highest standard.

The 22 foot Express Type Launch shown above is built along the latest lines with large roomy cock pits and engines placed well forward out of the way of passengers but readily accessible. It is beautifully finished, has brass and copper fastenings throughout and is capable of considerable speed.

The price $700 includes *complete* equipment such as is listed as "extras" on other makes. We have a boat for every need—in stock.

Write for illustrated catalog. **PIERCE MOTOR COMPANY, 200 22nd St., Racine, Wis.**

Coleman's Liquid Copper

It Will Not Foul. Makes hauling unnecessary. Put it on your boat, dry hard, rub down with steel wool and you will have a Fast, Seamless Copper Bottom, good for two seasons.

LIQUID COPPER COMPANY

85 Boston Street Boston, Mass. Telephone Connection

Nothing External Revolves

DETROIT REVERSE GEAR

Starts—Reverses—Stops INSTANTANEOUSLY

All working parts submerged in oil bath at every revolution.

The Simplest, Most Reliable, Most Compact and the Smallest Perfect Marine Reverse Gear ever offered. No outside moving parts to throw the oil or grease, tear the skirts, bruise the hands or catch waste. No noise. Manufactured in sizes for from 2 to 30 H. P. We carry all sizes in stock for immediate shipment. Guaranteed for one year. Write for special prices and free catalog. Valuable information from our Consultation Department FREE to motor boat men.

(40)

Detroit Engine Works, 14 Beaufait Ave., Detroit, Mich.

TOPPAN POWER DORIES & MOTORS

Safe. Best Sea Boat Built. $128 up. Send 4c. in Stamps for Catalog.

KNOCK DOWN DORIES, EASY TO BUILD

Send for free circular and prices.

Toppan Boat Mfg. Co., 21 Haverhill St., Boston, Mass.

JUST TIME ENOUGH. If you start now in a thorough study of marine engines you will be prepared to enjoy the sport fully when the motor boat season opens. You will know how to buy economically the best engine for your particular needs; how to install, repair, maintain and get the best out of your engine. Write to the West Side Y. M. C. A., 317 West 57th St., New York City, for booklet fully describing the Motor Boat School. Classes meet one night a week for ten weeks in a fully equipped gas engine laboratory.

EISEMANN

MAGNETO

Proven Perfect for Marine Motors

EISEMANN MAGNETO CO., 225 W. 57th St., NEW YORK

JAMES CRAIG

556 West 34th Street New York City

DESIGNER AND CONSTRUCTOR OF MARINE GASOLINE ENGINES AND SPECIAL MECHANISMS, SEVEN TO THREE HUNDRED HORSEPOWER

CAVITO UNDERWATER EXHAUST

"The Best In the Bunch"

Makes boating a real pleasure by eliminating Noise! Smoke! and Smell! 1¼-in. Bronze, $4.50. 1½-in. Bronze, $5.50. All jobbers.

CAVITO UNDERWATER EXHAUST CO.

44 Ottawa St. Grand Rapids, Mich.

ANDERSON ENGINES

QUALITY RIGHT PRICE

Anderson Engine Co.

SHELBYVILLE, ILL.

BATH MARINE CONSTRUCTION CO.

Naval Architects and Marine Engineers **BATH, MAINE, U. S. A.**

Designers and Builders of Pleasure Craft of all kinds. Estimates cheerfully furnished. Send 10c. stamp for **CATALOGUE G**

HENRY DOUGLAS BACON, N. A. Pres. and Gen. Mgr.

THE "DUNN" MARINE MOTOR

Four Cycle Reversible Outfit Complete $42.50

ENGINE ONLY, $33

This 1¾ actual h.p. Four Cycle Motor, with best coil, batteries, shaft, screw and muffler, tested, ready to install in Skiff or Launch. Weight of motor, 80 pounds. Bore, 3¾ in. Stroke, 4 in.

Write for Catalog "G."

WALTER E. DUNN - Ogdensburg, N. Y.

STANLEY MARINE MOTOR

Our Motor Boat will spend the winter in Southern waters.

WILL GIVE DEMONSTRATIONS. WRITE US.

THE STANLEY CO.

79 Milk Street Boston, Mass.

History

It has been about seven years since oil engines started to be used for marine work, and while under certain conditions some of these engines gave good satisfaction, there were many cases where they were failures. These engines failed for two reasons:

FIRST—Because the principle on which they worked was wrong. The manufacturers had attempted to put some sort of a vaporizer or gasifier into what was practically a gasoline engine (and some manufacturers are still doing this), instead of getting at the bottom of the thing and working up an out and out oil engine.

SECOND—Because the people were more or less familiar with gasoline engines, but not familiar with oil engines, and they attempted to handle the oil engines the same way they would handle a gasoline engine, and this wouldn't work. It wouldn't work to-day, because the oil engine is a distinct class of itself just as the steam engine is.

The result of all this was to give the gasoline advocate an opportunity which he did not let pass; so that to-day there are men who will "throw up their hands in holy horror" when an oil engine is mentioned. They will tell you that an oil engine will fill your cabin with a stench; that it will carbonize and requires frequent cleaning; that it is not reliable, and by no means buy one.

Now, these men say these things because they do not know the Remington Oil Engine. This engine works on a principle (thoroughly covered by patents) which creates in the cylinder such an atmospheric condition that the oil acts in it just as gasoline acts in the normal atmosphere. More than that, it produces a long-continued shove on top of the piston instead of the hammer-like blow created by the explosion in a gasoline engine.

The Remington engines do not fill your cabin with a stench; neither do they give off any poisonous and inflammable fumes, as come from gasoline. These engines will always start promptly, and as to their reliability and the amount of cleaning required, we would like to say that we have operated our factory and lighted it with our engines for the past three years, and during that time our men have never lost any time nor had to be sent home. The cylinders of the engines have never been cleaned, and the cost of repairs have been practically nothing. The above engines run ten hours a day, six days a week, at a cost of less than three-quarters of a cent per horse-power per hour.

There are other qualities, but we don't own this paper. If you would like to learn more, write us.

Ask for catalogue M.

REMINGTON ENGINEERING CO., Middle West Representatives
1018 North Sixth Street, ST. LOUIS, MO.

The Remington Oil Engine Co., Stamford, Conn., U.S.A.

STORES and OFFICES TO LET

IN THE

New York American Building

HUB OF THE AUTOMOBILE SECTION

Broadway, Columbus Circle, Eighth Avenue and 58th Street

Most Prominent Location in New York

Automobile Dealers, Stock Brokers, Commercial Schools, Advertising Agents, Artists' Studios, Dentists and Theatrical Agencies will find that this Building, its equipment and situation, offer the best place to locate.

Unlimited Opportunities for Sign Privileges and Advertising Purposes

Apply on premises or to

Huberth & Gabel, Agents, 147 Fourth Avenue Telephone 1390 Stuyvesant

OR YOUR OWN BROKER.

Sub. Sta. (Columbus Circle), "L" Sta. (9th Ave.—59th St.), B'way, 7th Ave., 8th Ave. surface cars, 59th St., 42d St., 34th St. crosstown cars, 5th Ave. and Riverside stages pass the door.

WE CORDIALLY INVITE YOU TO VISIT OUR EXHIBIT OF

"PARAGON"

TRADE MARK

Reverse Gears and One Way Clutches at the Boston & New York Motor Boat Shows.

Patented Oct. 20, 1908
April 13, 1909

EVANS STAMPING AND PLATING CO.

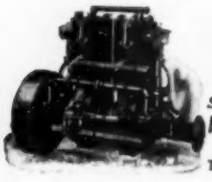
TAUNTON, MASS., U. S. A. Sole Manufacturers

Cape Cod Power Dory Co.

Boat Manufacturers

Write for Catalog

WAREHAM, MASSACHUSETTS



RELIABLE SERVICEABLE ECONOMICAL

Send for descriptive Catalog

Ask any of our many customers

SAGAMORE ENGINE CO.

74 to 78 Sagamore Street, LYNN, MASS.

---

70 FOOT CRUISER

LUDERS MARINE CONSTRUCTION CO.

Port Chester, New York

If you want a boat of the first class—in the class with the Triune, Antares, Ranger, etc., which we built—come to see us. Write anyway for literature

---

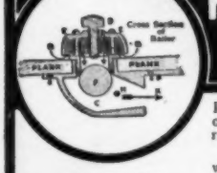
14 ft. Launch Complete with Engine Ready to Run **$94.50**

16, 18, 20, 23, 27, 28 and 35 footers at proportionate prices, including Family Launches, Speed Boats, Auto Boats and Hunting Cabin Cruisers of the latest design. Sixty-four different models in all sizes ready to ship, equipped with the simplest motors made; start without cranking; ten-year-old child can run them. Boats and engines fully guaranteed. Let us send you testimonials from some of our 12,500 satisfied owners. We are the world's largest power boat manufacturers. Our free consultation department can give you valuable, money-saving information. Write today for Free Illustrated Catalog and Demonstrating Agents' Proposition. (32)

DETROIT BOAT CO., 1147 Jefferson Ave., DETROIT, MICH.

MAKES FAST BOATS FASTER

HITCHCOCK'S AUTOMATIC BILGE BAILER



HOW IT WORKS

Water follows Course of Arrows, B. C. & H. and is left astern at K. The bailer above shown is for fast boats.

For only $5 you can add a mile or two an hour to the speed of your boat. It makes no difference whether your craft is a racer or a fast cruiser—the faster it is, the faster

HITCHCOCK'S AUTOMATIC BILGE BAILER

will make it go. At the same time you can keep your boat free of bilge water.

The drag of bilge water which retards the speed of your boat is automatically eliminated. This bilge bailer lets water out but lets none in. It is built to last as long as your boat, and to require absolutely no attention. And it costs but $5.00. You are certainly willing to pay that trifle for an added mile or two speed to your craft and for a dry boat. For sale by all dealers in Marine hardware. Write us anyway for particulars giving speed of boat, draft, etc.

FOR SLOW BOATS

we have a special Slow Boat Bailer. Write for particulars.

The Automatic Bilge Bailer Co., Dept. E., 150 Huntington Avenue, Boston, Mass.

STICKIT

on board! It's the most compact socket and ratchet wrench set made and it only costs $3. Fits 11 different sizes of nuts. Size just right for your tool roll. Price just right for your bill roll. Extra sockets any sizes desired, five on a ring for $1. Send for circular..

—Geo. A. Cutter, Sales Agt., Taunton, Mass.—

VICTOR MARINE MOTORS

in 8 sizes, double and single cylinder. 6 H. P. Perfect construction, reliable and powerful. Write for catalog.

R. S. HILL, Sole Manfr.
28 E. Woodbridge St., Detroit, Mich.

ORSWELL IGNITION

Plug and Coil combined

A jump spark that is absolutely MOISTURE, HEAT, and WATERPROOF

New and Improved Patterns for 1909

ORSWELL IGNITER CO., 182 Commercial St., BOSTON, MASS.

NEW YORK SALESROOM—136 Liberty Street—F. P. CONRAD, Mgr.

W. H. LINDLEY CO., Canastota, N. Y.

Shawmut Spark Plugs

have been tested under the most difficult and trying conditions, and have proven universally satisfactory. Price - - - - - - - - **$1.00**

BLAKE ELECTRICAL CO.
BOSTON, MASS.

COOLEY SPRAY HOODS

To fit any size Boat. Write for catalogue.

Cooley Manufacturing Company,
127 FEDERAL STREET BOSTON, MASS.

NOTICE-- We manufacture and carry in stock a complete line of

Brass Fittings Propellers
Under Water Exhaust Connections

and all other Boat Supplies.

It will pay you to send for our 1910 catalog Free upon request.

CHAS. KAUFMANN, Oshkosh, Wis., U. S. A.

INSURANCE vs. TOTAL LOSS

You never can tell when total loss may make you a motor boat the poorer. If your motor boat is insured, the loss of the boat wouldn't mean loss to your pocket.

I specialize on motor-boat insurance at reasonable rates. Write me.

Richard M. Montgomery Jr., Fire, Marine and Liability Insurance 111 WILLIAM STREET, N. Y. CITY

Marine Water Closets
LAVATORIES, TANKS, Etc.

J. H. CURTISS CO.

2 South Street NEW YORK

Telephone 4840 Broad

SAVE MONEY—BUILD YOUR OWN POWER DORY

Easy to Build
Winter Prices

Knocked-Down Frames or Patterns. Send for circular.
TOPPAN BOAT CO., 21 Haverhill St., BOSTON, MASS.

Have your naval architect submit plans and specifications to us, or we will submit plans and specifications to you. We build and repair boats of all kinds. Drop us a line.

HUDSON YACHT & BOAT COMPANY

NYACK, N. Y.

"Members National Association of Engine and Boat Manufacturers."

BUILD YOUR OWN BOAT

Buy a frame, do the work yourself from our patterns and instructions and save three-fourths the cost. Hire local carpenters and save at least half the cost of the same boat if purchased at any yard or factory. Our designs are the best.

Send for our catalog which tells you all about it

De FOE BOAT & MOTOR WORKS
1211 South St. Bay City, Mich.

WM. H. WILKINSON CO.

Manufacturers of

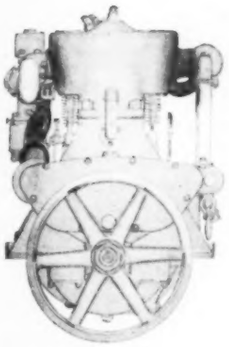
OILING DEVICES for GAS ENGINES

West Medway, Mass.

KOVEN GASOLINE TANKS

For Gasoline, Air for Whistles, Oil, Water, Mufflers, Condensers, etc. Heavy sheet iron and plate steel work of any shape desired. Galvanizing of all kinds of boat work.

L. O. KOVEN & BRO.
52 Cliff Street New York City



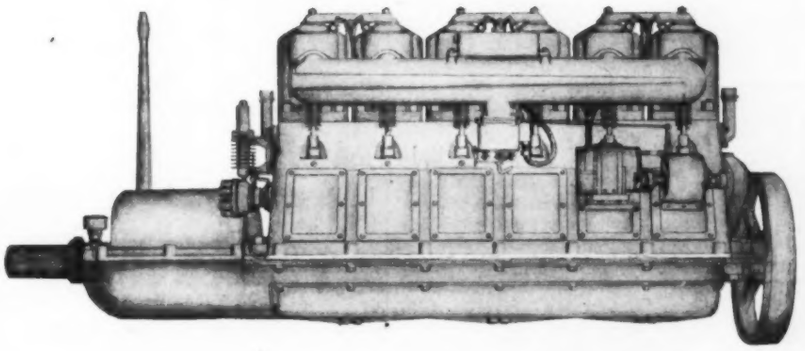
RHODE ISLAND

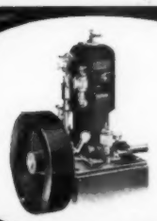
The highest grade 4-cycle motor. Made in one size, 6 cylinders, 6 inch bore, 9 inch stroke, giving 120 H. P. at 900 R. P. M.

INC. 1900

RHODE ISLAND MOTOR COMPANY
PROVIDENCE, R. I.

No surplus weight
Extra large valves
Extra large bearings
Latest self oiling device
New system water circulation
Double System Ignition with Hess Bright or Bosch high tension magneto
With or without governor control





HARTFORD
2-Cycle Marine Engines

The Hartford two-cycle marine engines are made in five sizes, ranging from three to ten horsepower, in one and two-cylinder models.
They are thoroughly guaranteed in every way.
Write for catalogue M and prices.
THE GRAY & PRIOR MACHINE CO.
93 Suffield Street, Hartford, Conn., and 117 Commercial St., Portland, Me.

For DECK and all other SEAMS

ELASTIC SEAM-COMPOSITION
TRADE MARK

THE DONAHUE HARDWARE CO., Sandusky, Ohio
H. STEFFENS CO., 337-339 Fell St., Baltimore, Md.
E. A. BURNSIDE, Point Pleasant, West Virginia.
JENNISON HARDWARE CO., Bay City, Michigan
ELISHA WEBB & SON, cor. Water and Chestnut Sts., Philadelphia, Pa.
THE CHAS. F. BEEBE CO., Portland, Oregon
A. S. MORSS CO., 210-212 Commercial St., Boston, Mass.
CHAS. A. WURR, 179-201 Hallock Ave., New Haven, Conn.
JOHN C. HOPKINS & CO., 119 Chambers St., New York.
CHARLES D. DURKEE & CO., 2 and 3 South St., New York

Weather checks, Floors, Bedding and Glazing of Skylights, Conservatories, Pointing of Stone Work, in fact, in all places where a perfectly tight joint is wanted, use **Elastic Seam Paint** and **Elastic Seam Composition.** The *Elastic Seam Composition* is made in white, black, gray and yellow, and to order in all colors.
Send for new booklet. Sample sent on receipt of thirty cents in stamps

ELASTIC GLOSS YACHT WHITE
The whitest gloss white in existence. Works as smooth as oil paint. Dries in from 6 to 12 hours. Withstands acids and gases, will retain its gloss the entire season. Can be touched up any time without showing. One coat over a coat of *Elastic Flat Yacht White* will last all season. **Price, $4.00 a gal.; $2.00 a half gal.**

ELASTIC FLAT YACHT WHITE
It is the whitest yacht white. In spreading and covering unsurpassed. Dries in one to two hours. Withstands acids and gases. Withstands hard usage and scrubbing. Two coats are sufficient all season. **Price, $3 00 a gal.; $1.00 half gal.**

Elastic Special Bright Green Copper Paint
Elastic Special Bright Red Copper Paint | **$3.00 per gal.**
Elastic Special Bright Green Bootopping - $3.50 per gal.

TO BE BOUGHT OF

A. W. ADAMS, 16, 17, 18 and 19 North Market Wharf, St. Johns, New Brunswick
JOHN LECKIE, Ltd., 76 Wellington St. West, Toronto, Ont., Canada.
E. F. HURLBERT, Marine Basin, Bath Beach, New York
C. N. COOK & CO., Alexandria Bay, New York.
M. G. STONEMAN & SON, Broadway, Beaver, State and Quay Sts., Albany, N. Y.
THE PAULSEN CO., 25 East Bay St., Savannah, Ga.
GEO. E. CHASE & CO., 323-325 East Bay St., Jacksonville, Fla.
MARINE PAINT CORPORATION, Norfolk, Va.
C. J. HENDRY CO., 64 Clay St., San Francisco, Cal.
C. M. JACOBSEN, 238 Jefferson Ave., Detroit, Michigan
BLISS BROS., 170 Commercial St., Boston, Mass.
J. S. DAVENPORT & SON, 79 Atlantic St., Stamford, Conn.
MARINE MFG. & SUPPLY CO., 158 South St., New York
O. C. & K. R. WILSON, 78 Dey St., New York
GEO. M. AUTEN & CO., 26 South St., New York
GEO B. CARPENTER & CO., 392-8 South Water St., Chicago, Ill.
THOS. DEXTER, 1st Ave. and 56th St., Brooklyn, N. Y.

H. B. FRED. KUHLS, Sole Manufacturer (Successor to Cole & Kuhls) **Office and Works:—23d Street and 3d Avenue, Borough of Brooklyn, NEW YORK, U. S. A.**

Free Copy of Original Gibson Artist's Proof

There is more or less discussion, not as to whether or not advertising pays in the long run, but as to what percentage of people sit down to write a manufacturer because of having read his ad. We believe that the great percentage of the readers of MoToR BoatinG order direct from the manufacturer on account of having read his ad.

We want to get more positive information on the subject. We are therefore going to ask any reader who answers an ad. printed in this issue to drop us a line giving the name of the manufacturer addressed.

For this courtesy on your part we will mail to you a beautiful Gibson picture Free. These pictures retail for $1.00 each. Of course it is unnecessary to elaborate on the merits of a Gibson picture as you already know they can be found on the walls of the most exclusive homes.

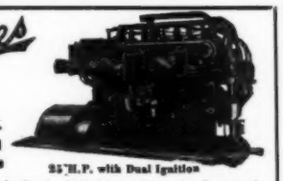
We offer to give you this beautiful picture in order to make it worth your while to send us the information requested. Remember, all that is required of you is to send us the name of any one or more advertisers in MoToR BoatinG that you may write to.

Motor Boating
1789 Broadway, New York

WHY A
SINTZ REVERSING PROPELLER
is better than a Reverse Gear is very clearly explained in our booklet. In a Sintz you get strength, speed and absolute control. You banish bother and repairs. Write to-day for booklet and prices.

Wilmarth & Morman
617 Canal Street
GRAND RAPIDS, MICH

Holmes



The MOST POWERFUL, REFINED and DURABLE engine made

25 H.P. with Dual Ignition

The Engine that "speaks for itself." After a long, hard season's work as good as new. Cranks are more than half the diameter of the cylinder. The real "Get-at-able" Long Stroke Machine.
SEND FOR NEW LOOSE LEAF CATALOG

The Holmes Motor Co., West Mystic, Conn.
AGENTS: J. M. ARTHUR & CO., Portland, Oregon. W. S. FERGUSON, P. O. Box 644, St. Louis, Mo. HARRISON M. REED, South Jacksonville, Fla. No. 1 Madison Avenue, New York.

THIS IS AN EXACT CUT OF THE
B & B Speed Wheel

Write at once for catalog for the lowest price of the best propeller wheel made.

with which we absolutely guarantee to increase the speed of any launch 1 to 3 miles per hour. This is a bona fide guarantee, or we refund the amount paid. We have increased the speed of numerous launches saving fuel, etc. Why not yours? Our design of wheel has less percentage of slippage than any other propeller now on the market.

BRYANT & BERRY CO., 90 West Atwater St., DETROIT, MICH.
The propeller wheels are carried in stock by our Eastern Representatives, E. J. Willis Co., 8 Park Place, New York

Coates Garage Outfit For Drilling Grinding and Buffing

COATES CLIPPER MFG. CO.
Worcester, Mass.

BOATS — SEAMLESS STEEL TANKS — AUTOS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA.

Main Office PHILADELPHIA — Branch NEW YORK

For Family Use
20 to 30 Miles an Hour :: Speed and Comfort
G. F. ELLIOTT, Amherst & Niagara Sts.
BUFFALO, N. Y.

H.E. BOUCHER MFG. CO.
20 Fulton St., New York City
Inventions developed.
Marine Models a specialty.
Special Machinery designed and built.

"Great Oaks from little acorns grow"

Little Ads grow into big business—eventually.

E. B. VAN WAGNER MFG. CO.
SYRACUSE, NEW YORK
Finished Die Moulded **CASTINGS**
Timer Parts and Bearings Our Specialty
30 Years' Experience in the Manufacturing of Alloy

PURE AIR
Ventilation in Your Boat
Guarantee Against Explosion
Send for Descriptive Circular
AUTOFORCE
VENTILATING SYSTEM
BOSTON, - MASS

Watres Whistle—the whistle of efficiency—deep toned and powerful. Send for booklet.
WATRES MANUFACTURING CO.
1127 D Broadway, New York

Kennebec
CANVAS COVERED CANOES
suit all tastes. For those who make a living in the woods and for those who paddle for pleasure everywhere. Made in the best equipped factory in a community famous for canoe making.
GET OUR CATALOG AND PRICES.
Paddling, sailing and motor canoes (with air chambers for safety). All kinds of row and motor boats up to 35 ft. long. Address Dept. F
KENNEBEC BOAT & CANOE CO., WATERVILLE, ME.

IDEAL SWITCHES
are the only positive self-locking Ignition Switches on the market.
Circulars on request.
IDEAL SWITCH COMPANY
PLAINVILLE, CONNECTICUT

GOVERNMENT INSPECTOR GENERAL

approves the O'Brien Electric Whistle for motor boats, price $8.75 with 25 ft. of wire and push button. Operated at any point by push buttons, run on a few ordinary dry batteries or storage battery. Send for catalogue on electric whistles, searchlights, dynamos, etc.

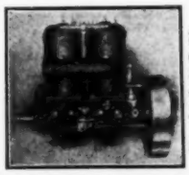
THE EDGAR MFG. CO.,
22 East Bldg., Boston, Mass.

K-D. BOAT FRAMES
Free Booklet.
150 Sizes, All Models. Cabin, Speed, Semi-Speed & Family

BUILD YOUR BOAT
BY the GERE METHOD of EASY BOAT BUILDING
MONITOR BOAT FRAME CO. 125 N. 7th St. Newark, N.J.

EJECTOR MUFFLERS
will silence your motor without loss of power. Specially constructed to prevent rust and to allow water to be run through the exhaust pipe. Six years' use have proven their superiority.
OVER 50,000 IN USE
MOTOR & MFG. WORKS CO.
GENEVA, N. Y. "Dept. E"
Agents: Atlantic-Maritime Co., Boston & Gloucester; Henry Keidel Co., Baltimore, Md.; C. L. Newman, Halifax, N. S.; C. D. Callahan, San Pedro, Cal.

BLOW YOUR WHISTLE WITH PURE AIR
BY USING
Dixie Air Compressor
:: :: *WRITE FOR BOOKLET* :: ::
JOHN H. THOMPSON & CO.
650 Woodward Ave., :: :: Detroit, Mich.

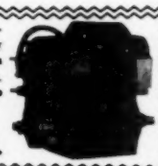


THE SPRINGFIELD
Single and double cyl. heavy duty motors. Double and four cyl. speed motors. Two cycle, make and break or jump spark ignition.
SPRINGFIELD MOTOR CO.
Springfield, Mass
Write for Catalogue.

One feature of the PFANSTIEHL COIL which makes it worth your while to look into it further is our patented system of winding, which enables us to guarantee the windings for five years.
Write us to-day

Pfanstiehl Magnetos and Coils

With a PFANSTIEHL MAGNETO you don't need a battery ignition system in your car. You can start your car on the magneto. It is a high tension magneto at a low tension price.
Write us to-day



Pfanstiehl Electrical Laboratory, North Chicago, Ill.

INSURE WITH SEARS

THE KINNEY ROTARY BILGE PUMP
No more back breaking work at the pump, runs by friction from the fly wheel of the engine.
Made of solid bronze, guaranteed for a year and will last a lifetime.
Write for descriptive bulletin
KINNEY MFG. CO., 920 Colonial Bldg., BOSTON, MASS.

Nothing that grows in water ever clogged a STICKLER WEEDLESS WHEEL
Warranted

Patented

"Thru the Tangle Like an Eel" Speeds along in the Tough Going where imitations foul and fail. Only propeller that is self-clearing under all conditions. Price reduced
Stickler Weedless Wheel Co.
Portage, Wis.
Furnishers to Motor Boats
Write for Free Catalogue of accessories, etc.

16-ft. Steel Launch $96
Complete with Engine, Ready to Run
18-20-22-27 foot Launches at proportionate prices. All launches tested and fitted with Detroit two cycle reversible engines with speed controlling lever—simplest engine made—starts without cranking—has only 3 moving parts—anyone can run it. Steel Rowboats $20.00. All boats fitted with air tight compartments—cannot sink, leak or rust—need no boathouse. We are the largest manufacturers of pleasure boats in the world and sole owners of the patents for the manufacture of welded steel, leak sealed, commercial riveted steel boats. Orders filled the day they are received. Write for Free Illustrated Catalog and testimonials of 30,000 satisfied users.
Michigan Steel Boat Co., 1230 Jefferson Ave., Detroit, Mich., U. S. A. (30)

WILLIAM E. THOMAS & CO.
SPRAY HOODS
Brass Frames and Fittings covered with government khaki duck. The best hoods on the market. Send for prices and catalogue
42 South Street, NEW YORK, N. Y. Telephone 1813 Broad

REGULAR TYPE $1.00

The Regular Reliance is the famous "Spark in Water" plug known the world over as the plug that can't short-circuit. Electrically different from any other plug, with every part accurately machined, making them mechanically as well as electrically correct.

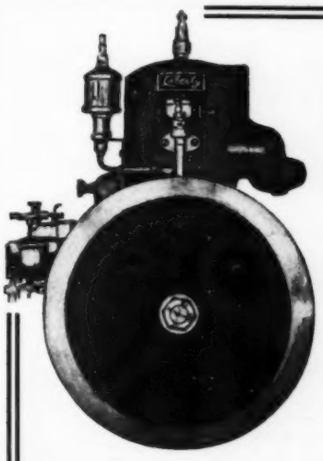
MAGNETO TYPE $1.45

The Reliance Magneto plug is designed along the Regular Reliance principles, but built especially for service when the current is generated by a magneto. It is especially desirable and serviceable when an excess of oil is used.

Send to-day for interesting booklet, with it we send the most puzzling electrical novelty of the day, sent for the asking.

Jeffery-DeWitt Co.,
Spark Plug Manufacturers
217½ HIGH ST., NEWARK, N. J.

S. & F. STEPHENSON, Agents for United Kingdom, 19 Canning Place, Liverpool, Eng.
ARMANO FREY & CO., Agents for Continental Europe, Berlin, Germany



THE
LIBERTY

1½ HP., 2½ HP., 3½ HP., 6½ HP.
Single Cylinder Motors
7-8 and 12-14 HP.
Double Cylinder Motors.

HERE IS AN OFFER WORTH CONSIDERING

WE WILL FURNISH YOU A GUARANTEED 6½ H. P. MOTOR FOR **$100**

This price includes:

Engine, sight feed lubricator, "Schebler" carbureter, bronze pump, grease cups, elevated brass timer with reversing lever, drain and relief cocks, flanged couplings, ball thrust bearings, 15" three-blade bronze propeller, six feet steel shafting, bronze stuffing box, guaranteed spark coil, mica spark plug, jump spark wire, battery wire, knife switch, one set (6) dry cell batteries, battery connections, lag screws, muffler.

SPECIFICATIONS.—Bore 5", stroke 4½", weight complete 200 pounds, crank shaft 1⅝" drop forged steel, fly wheel 16" in diameter, water jacketed exhaust with muffler, brass vertical plunger pump with both check valves enclosed, "Liberty" improved system of oiling, propeller shaft 1". Rated 6½ H.P. at 750 revolutions per minute.

Our Naval Architect Department furnishes you plans for any craft you want to build. These plans and templates are of especial interest to the small boat builder. ***Write for 1910 catalog.***

DETROIT AUTO SPECIALTY CO.

909-911 Greenwood Ave., DETROIT, MICH.

GEO·B·CARPENTER & CO.

1840 *Marine Accessories* 1910

Our new 500 page 1910 Marine Supply Catalogue is now ready—Larger, more complete and more interesting than ever before. It will contain not only the latest ideas in up-to-date Marine Equipment, but also valuable and interesting matter in reference to the care and handling of Marine Engines and of Sailboats, written by men who are recognized authorities. Let us have your application as early as possible with 18 cents in stamps to cover postage, which will be refunded on first order.

GEO·B·CARPENTER & CO.

200-208 South Water Street, Chicago, Illinois

Baldridge
Reverse Gear

THE "BALDRIDGE" is not the most expensive gear on the market. Neither is it the cheapest. But it *is* the best gear you can buy at *any* price. Back of this claim stand the remarkable operating records of nearly 5,000 gears on boats of every size and class. Not a single gear has been discarded because it failed to "make good." This alone should convince you the "Baldridge" is worth looking into.

We don't claim the "Baldridge" is "fool-proof"

No piece of machinery will stand continual abuse. But we *do* claim that the "Baldridge" has a greater factor of safety than any other gear on the market—that it is the most reliable gear made.

But find out *all* about the "Baldridge." You owe it to yourself—to your boat—to the friends you take for an outing. A card will bring full particulars.

Smith & Baldridge Machine Co.
63 Amsterdam St., Detroit, Mich.

FERRO

The World's Standard Two Cycle Motor

WRITE US TODAY FOR FERRO BOOK ON MOTORS AND EQUIPMENT

It tells in simple, non-technical language what every buyer and owner should know about their construction and operation. This is sent free to anyone interested in boats or engines.

THE ENGINE IS THE DECIDING FACTOR IN PURCHASING A MOTOR BOAT

The engine should be your first consideration, for on it depends your ultimate satisfaction.

We help you to select the best boats built for all purposes, as well as the best engine.

Therefore, write to us whether you intend buying complete hull or engine alone. We can send you full information on the best motor boats built.

20,000 Ferros are in use in all parts of the world.

THE FERRO MACHINE & FOUNDRY CO.

Largest Marine Engine Builders in the World

Main Offices, 790 Superior Avenue, Cleveland, Ohio
New York office, 44 Cortlandt St., Second Floor
Ferro Representatives in all principal cities and ports

If you are interested in building a boat of any sort, you will be interested in

THE DESMOND WAY

Extraordinary Advantages on Scientific lines.

Send for Catalogue 55—FREE

THE DESMOND CO.

Naval Architects **ELIZABETH, N. J.**

Removed from Tarrytown-on-Hudson to larger Quarters, Draughting Rooms and Mold Lofts in Elizabeth.

Holliday Marine Motors and Gears

AGENTS WANTED

for this dependable line of Motors and Gears. Every sale makes a satisfied customer and adds to your profit and reputation. Write to-day stating territory desired.

HOLLIDAY MOTORS

1, 2 and 4 cylinders, four cycle, jump sparkignition. 2½ to 40 horsepower

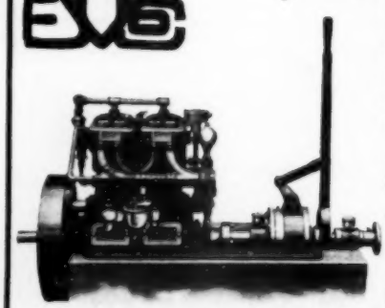
REVERSE GEARS

Vanadium Steel, 4 sizes, transmitting 4 to 45 horsepower.

The famous Holliday line is backed by 18 years' manufacturing experience

Send for Catalog.

Holliday Engineering Co.
751 Bunker Street, Chicago, Ill.

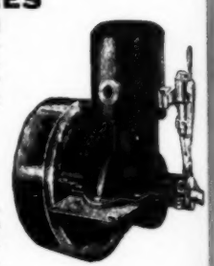


Port Side 5 H.P.
Holliday Motor with Reverse Gear.

—BELLE ISLE—

MARINE ENGINES

The simplest, staunchest, swiftest, most powerful and efficient 2-cycle engine of its size built. Perfect and refined in every detail. Makes speedy launch out of ordinary canoe, row boat, skiff, yacht tender. Great for hunting, fishing and flat-bottom boats, and 14 to 20 feet speed launches.



2 Actual H. P. Bare Engine $23

Complete Engine with Accessories and Fresh Water Boat Fittings, $42.00. Salt Water Boat Fittings, $4.00 extra.

Anyone can install and run. Compact, strong, durable, reliable, reversible, economical, safe. We also make up to 10 H. P., one and two cylinders. Sold direct from factory to user. Fully guaranteed. 30 days approval. Prompt shipment. Order now.

NEW BELLE ISLE MOTOR CO., 12 Motor Boat Lane, Detroit, Mich.

BECAUSE

We have done so much real thinking, and have perfected every little detail, the

"GRAY" AUTOMATIC WATER COOLED BURNED GAS COMPRESSOR

and

COMPLETE WHISTLE OUTFIT

is in a class by itself—it's ***automatic, absolutely safe, dependable under all conditions*** and ***requires no attention from the owner.*** Price $5 to $50. Ask for catalogue Signal Dept.

GRAY-HAWLEY MFG. CO., Fort & Vermont Sts., DETROIT

Makers of

Gray Mufflers — Autochimes — Fog Bells —
Gasolene Filters — Foot Pedals — Valves, Etc.

This Free Book Tells All About Electric Light for Motor Boats

Send today for this free book, and study up on the question of how to fit up your motor boat for next season with a complete electric lighting outfit at small expense. The most complete book of the kind ever printed. If you had trouble with oil lamps last season, you surely should read this book. Sit down and write for it today.

DAYTON ELECTRICAL MFG. CO.

Largest Manufacturers of Ignition Apparatus in the U. S.

188 St. Clair St. **DAYTON, OHIO**

H. L. F. TREBERT'S LATEST—Sold Under a Positive Guarantee

For Racing Boats, For Semi-Racing Boats, For Pleasure Boats, For Hunting Cabin Boats, For Cruiser and Work Boats.

10 to 18 H. P., 2 Cylinder 4 Cycle
17 to 45 H. P., 4 Cylinder 4 Cycle
25 to 60 H. P., 6 Cylinder 4 Cycle
35 to 60 H. P., 4 Cylinder 4 Cycle
80 to 90 H. P., 6 Cylinder 4 Cycle

The power developed depends on No. of R.P.M. engine is run at.

Money back if you are not satisfied.

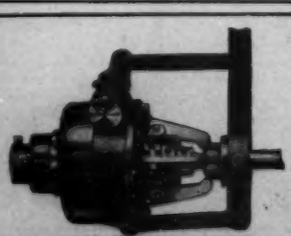
No weak parts or excessive gearing. All parts accessible and not a moving part exposed.

A noiseless, clean, beautiful, powerful, reliable, durable, self-oiling engine, free from vibration.

Not a moving part visible.

Send for Catalog

H. L. F. TREBERT, 407 St. Paul Street, ROCHESTER, NEW YORK



SUDDEN REVERSES

Can be safely made with JOES' GEAR

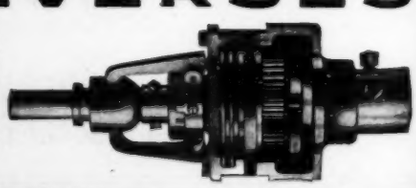
1910 Models now ready

INSIDE FACTS: Multiple disc friction that won't slip. Three slow running steel spur gears that will neither grumble nor break.

Send for 1910 Catalogue **Joes' Improved Reversing Gears and One Way Clutches.**

THE SNOW & PETRELLI MFG. CO.

445 Chapel Street - - New Haven, Conn.



The MONOPLEX

"With a tone all its own"

ELECTRIC HORN

The MONOPLEX is the ideal signalling horn for a motor boat; it is both a powerful warning and a courteous request for the course; it is durable in construction, handsome in appearance, and convenient to use.

Powerful. The clear note of the Monoplex penetrates as far as any other motor boat signal, whether whistle or bell or horn. In passing or crossing, it is an effective signal.

Dignified. The Monoplex has a tone all its own that penetrates but does not irritate. It effectively warns approaching boats but does not startle the owner and his guests, nor rack the nerves of others within hearing.

It is a gentlemanly request for the course.

Convenient. The Monoplex is easily operated by the pressure of a push button placed where most convenient to the operator, whose hands and feet, even while the signal is sounded, are left free for the control of the craft.

The MONOPLEX

"With a tone all its own"

is an electric horn, made like a telephone. Its strong diaphragm is vibrated by an electric magnet, operated by dry cells, storage battery or charging dynamo.

It is designed for constant and convenient use. Its simple mechanism is well constructed according to the Atwater Kent standard.

It is quickly and easily installed. Its note may be easily adjusted—louder or lighter—to suit the varying needs of its owner.

It consumes only 1 to 1¼ amperes and yields the best results on from 6 to 12 volts. The current may be supplied, if desired, from the same source as the ignition system.

From every point of view—on land or water—on boat or pier—racing or cruising—at full speed or at anchor—

The MONOPLEX

"With a tone all its own"

is the ideal motor boat horn

The price of the Monoplex, complete with push button and conductor cord, is $15.00. Shall we send you a folder with fuller details?

The Atwater Kent Manufacturing Works

41 No. Sixth Street, Philadelphia, Pa.

EXTRA SCRIPPS BULLETIN

One Season's Record of Victories Won by the Onion II, equipped with a Six-Cylinder Scripps Motor

Kingston, Ont., May 24.—Against Three D's, a new and very fast boat, and Highball of Brookville, champion of Canada, Onion II won by a mile in very high sea.

Cananoque, Ont., July 1.—Handicap race; won easily.

Clayton, N. Y., July 5.—Won race open, to all boats up to 32-foot length.

Alexandria Bay, July 17.—Finished first, but exceeded time limit in handicap race.

Alexandria Bay, July 24.—Finished first, but exceeded time limit in handicap race.

Frontenac, July 31.—Won easily in race open to all boats up to 32-foot length.

Alexandria Bay, August 7.—Race open to boats up to 37½-foot length. Ahead when slight accident put Onion out of race.

Clayton, N. Y., August 9.—Onion II won in race open to 32-foot class.

Cananoque, August 11.—Morning race, handicap; got second. Afternoon race, open to 32-foot class, first.

May Irwin's Novelty Race, August 12.—Open to all power boats, Onion II won.

Frontenac Point, August 13.—Blew out plug and lost by 20 seconds. August 14.—Handicap won by 2 minutes, 20 seconds; getting decision over another boat that tied, on corrected time, but which refused to run race again.

Frontenac, August 24.—Commodore's Cup, handicap event, to be won three years. Open to boats up to 40-feet. Onion II won.

Cananoque, September 6.—Handicap event, Onion II won.

SCRIPPS MARINE MOTORS

We know of no better way to prove the mechanical superiority and the reliability of Scripps Motors than by citing the wonderful records made by them in racing contests in every part of the country.

We are particularly proud of the record of the Scripps in the speed boat, Onion II, owned by Ira A. Kipp, on the St. Lawrence, and nearby waters during the past season. The record of Onion II shows an unbroken series of victories, as shown in the adjoining column.

One race is not always convincing, but when a motor shows such a consistent superiority against all opponents, then you have no alternative but to acknowledge that in design and construction, it is far above the ordinary.

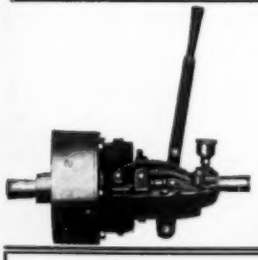
Scripps Motors are not especially designed as racing motors. Their success in speed contests is duplicated in every field of operation—in work boats, in pleasure boats, in family launches and cruisers. A Scripps motor recently took a cruiser on a 2500-mile journey without a hitch, repair or adjustment of any kind.

Scripps Motors are 4-cycle in type and are made in every desired size, from 6 to 100 H. P., one to six cylinders. Only the highest grade of materials are used throughout, and the care in their finish and construction can only be duplicated by the motors in the highest grade of automobiles.

We will gladly send catalog and information regarding Scripps Motors on request.

SCRIPPS MOTOR CO.
651 LINCOLN AVENUE, DETROIT, MICH.

ONION II.

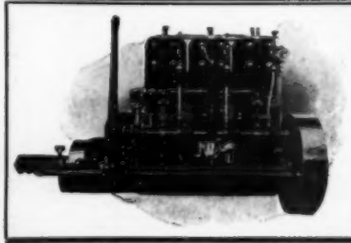


Gies Reverse Gear

Successor to the reversible propeller

Special No. 1,	1½	H. P. per	100	Revolutions	$12.00
Model A,	2½	"	"	"	24.00
Model B,	4	"	"	"	48.00

GIES GEAR COMPANY, 45 E. Fort St., Detroit, Mich.

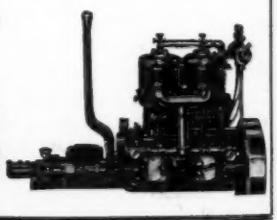


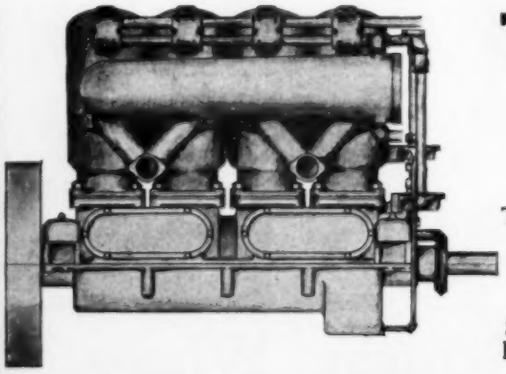
Palmer Motors and Launches

Two and Four Cycle. One, Two and Four Cylinder. Stationary and Marine. One to Thirty H.P. Catalogue FREE.

PALMER BROS., Cos Cob, Conn.

New York: 31 E. 21st St. Philadelphia: The Bourse. Boston: 85 Union St. Providence, R.I.: 242 Eddy St. Portland, Me.: Portland Pier. Seattle, Wash.: 526 First Ave., So. Vancouver, B.C.: 1600 Powell St. **Send for our 1910 Catalogues**





The Dodge Engine

has no equal for

Durability, Economy, and Simplicity

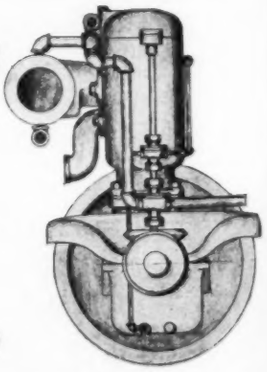
1, 2, 3, 4, and 6 cylinders

Two Cycle, Open Crank Case, from 4 to 60 H.P.

SATISFACTION GUARANTEED

Catalogue and price list free for the asking

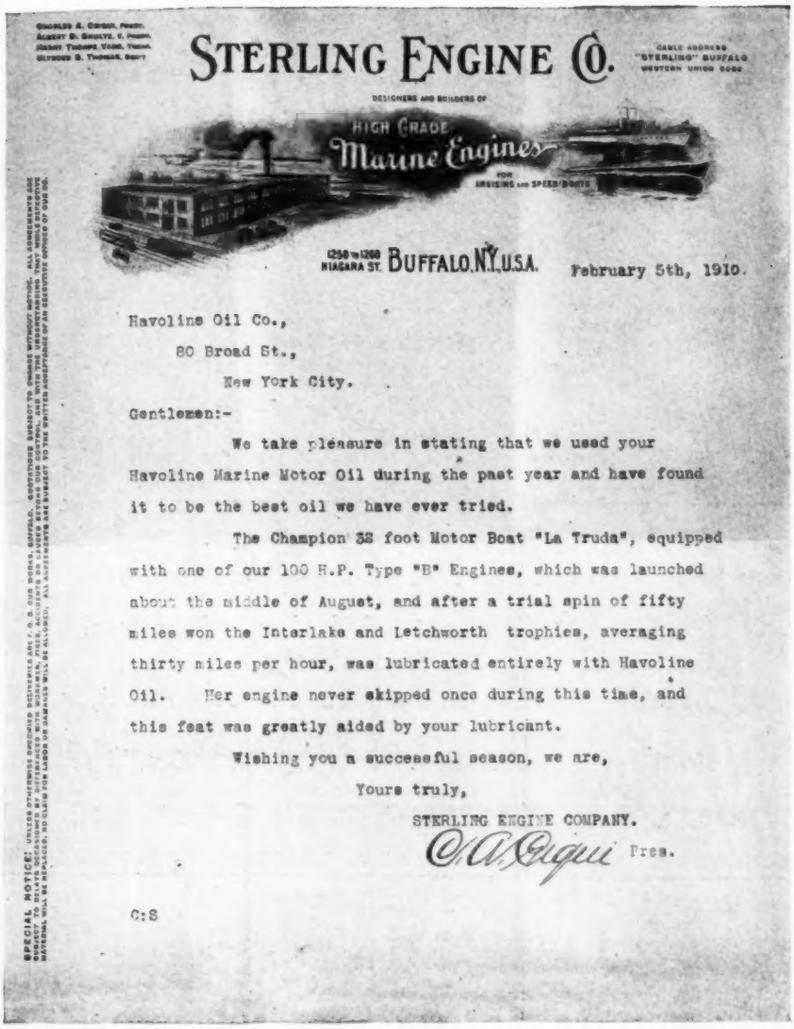
Special inducements with the first fifty engines sold beginning February 1st for spring delivery.



It will pay you to see the Dodge Engine before buying.

DODGE ENGINE CO.
384 ATLANTIC AVENUE, BOSTON, MASS.

Grand opportunity for a few hustling agents.



STERLING ENGINE CO.

DESIGNERS AND BUILDERS OF HIGH GRADE Marine Engines FOR RACING AND SPEED BOATS

1258 to 1268 NIAGARA ST. BUFFALO, N.Y. U.S.A. February 5th, 1910.

Havoline Oil Co.,
80 Broad St.,
New York City.

Gentlemen:-

We take pleasure in stating that we used your Havoline Marine Motor Oil during the past year and have found it to be the best oil we have ever tried.

The Champion 38 foot Motor Boat "La Truda", equipped with one of our 100 H.P. Type "B" Engines, which was launched about the middle of August, and after a trial spin of fifty miles won the Interlake and Letchworth trophies, averaging thirty miles per hour, was lubricated entirely with Havoline Oil. Her engine never skipped once during this time, and this feat was greatly aided by your lubricant.

Wishing you a successful season, we are,

Yours truly,

STERLING ENGINE COMPANY.

C. A. Dyer Pres.

C:S

SPECIAL NOTICE: UNLESS OTHERWISE SPECIFIED DELIVERIES ARE F. O. B. OUR WORKS, BUFFALO. QUOTATIONS SUBJECT TO CHANGE WITHOUT NOTICE. ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS AND DELAYS BEYOND OUR CONTROL. ALL GUARANTEES ARE SUBJECT TO THE WRITTEN ACCEPTANCE OF AN EXECUTIVE OFFICER OF OUR CO. MATERIAL WILL BE REPLACED, NO CLAIM FOR LABOR OR DAMAGES WILL BE ALLOWED. ALL AGREEMENTS ARE SUBJECT TO THE WRITTEN ACCEPTANCE OF AN EXECUTIVE OFFICER OF OUR CO.

A cloud of witnesses

This letter is but one of many received from the most prominent Marine Motor Manufacturers. Other letters of the same character have been received from the following concerns:

PALMER BROTHERS, New York
ELECTRIC LAUNCH COMPANY
GAS ENGINE & POWER CO., Morris Heights, N.Y.
JAMES CRAIG, New York City
STERLING ELECTRIC COMPANY
GRAY MOTOR COMPANY, Detroit, Mich.
SEITZ MOTOR COMPANY, Newark, N. J.
JENCICK MOTOR COMPANY, Port Chester, N. Y.
ERD MOTOR COMPANY, Saginaw, Mich.
ATLANTA MOTOR COMPANY, Amesbury, Mass.

HAVOLINE
MARINE MOTOR OIL

"It Makes a Difference"

DIXIE III., Fastest Motor Boat in the World,

Uses* HAVOLINE OIL *Exclusively

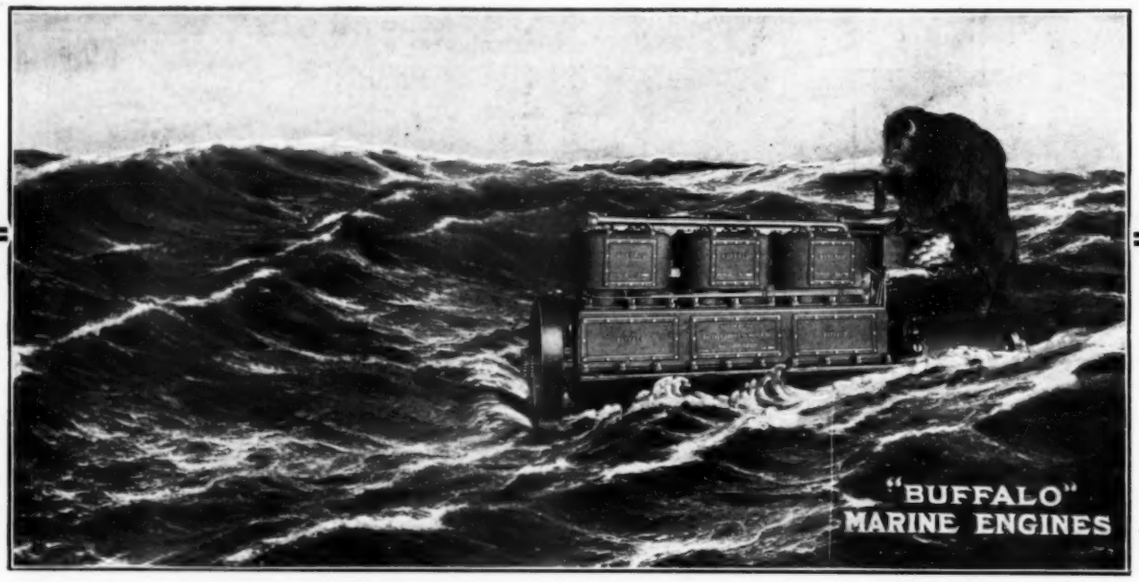
SEND FOR 1910 BOOKLET

EXECUTIVE OFFICES: 82 Broad Street, NEW YORK

CHICAGO: 40 Dearborn Street
BOSTON: 749 Boylston Street
ST. LOUIS: 4330 Olive Street

PACIFIC COAST AGENTS:
W. P. Fuller & Company
All Pacific Coast Cities

RETAIL STORE: 1906 Broadway, NEW YORK



The Engine of Constant Service

JUST GIVE A LITTLE LOOK
BUFFALOS will be at the New York Show, at the Buffalo Show, at the Chicago Show, at the Detroit Show. Pry into their innards.

Constant refinement of design, of course.
Improved construction, always.
But no better materials, or equipment, until science discovers them.
We have a new catalog. Just say so, and we'll send it.

BUFFALO GASOLENE MOTOR CO. **1204-1216 Niagara Street, Buffalo, N.Y.**

PYRAMID ALUMINUM

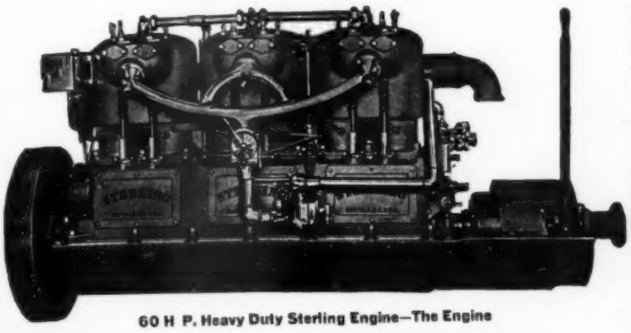
The Ideal Floor Cover for Motor Boats

or any purpose requiring a clean, durable, sanitary floor, will not tarnish, discolor or corrode and is practically indestructible and ever-lasting. Write today for descriptive circular and prices.

FACTORY SALES CORPORATION

1434 MICHIGAN AVENUE : : : : : : : : : CHICAGO, ILL.

STERLING QUALITY



60 H P. Heavy Duty Sterling Engine—The Engine

STERLING ENGINE COMPANY

1264 NIAGARA STREET

BUFFALO, N. Y., U. S. A

ROBERT MORE, Jr.
BRIDGETON, N. J.

January 3rd, 1910.

Sterling Engine Co.,
Buffalo, N. Y.

Gentlemen:-

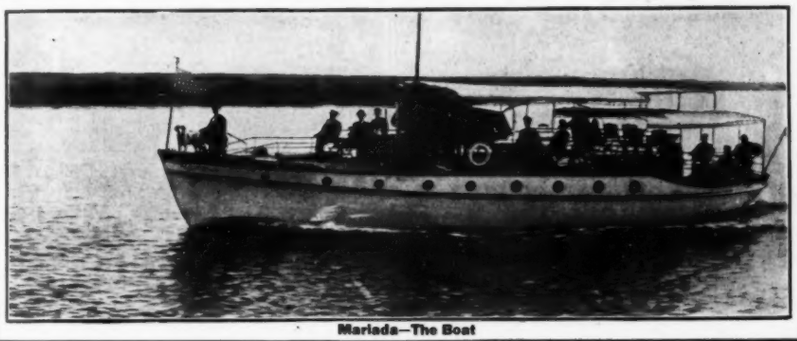
We have only words of praise for "THE STERLING 6 CYLINDER 60-HP HEAVY-DUTY ENGINE" installed in our yacht "THE MARIADA." We have never had any trouble with the engine whatever. We ran it on our maiden trip about sixteen hundred miles, and during that time do not think it missed an explosion. Can you beat it? It runs like a WATCH, smoothly and without friction or vibration. If the prospective buyer wants a good engine he wants a "STERLING".

You are at liberty to publish this letter. Wishing you a prosperous NEW YEAR for your 1910 "STERLING," we are, as ever

Very respectfully yours,

Robert More, Jr.
Owners "YACHT MARIADA." Richard M. More.

BUILT IN SIZES FROM 8 TO 240 H. P. FOR SPEED, WORK AND PLEASURE BOATS



Mariada—The Boat

VISIT OUR EXHIBIT AT THE MOTOR BOAT SHOWS AT NEWYORK, BUFFALO AND CHICAGO

Kenyon Life Preserver Pillows and Cushions Have a Greater Sustaining Power Than Standard Life Preservers.

NOT only are the Kenyon Life Preserver Cushions and Pillows the best, the most durable, and most completely waterproof cushions made, but they will, also, in case of emergency, sustain a heavier body in the water for a longer time than the regular standard life preserver.

Kenyon Life Preserver Pillow

Kenyon Life Preserver Cushion

They contain no cork, but *do* contain a *non-absorbent* filling which makes them as soft as if filled with down.

They are made in the popular mission shape, covered with either leather or imitation leather, in tan, green or red.

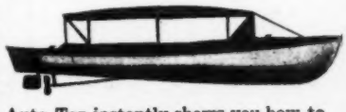
They will support the heaviest person in the water for an indefinite period of time, and are far more buoyant than any regular life preserver made.

These famous Kenyon Life Preserver Cushions and Pillows are made in one stock size or in any size to order.

Send for illustrated descriptive price catalogue today---NOW.

Kenyon Boat Tops.

are folding tops for motor boats. They can be raised and lowered at will quickly and without inconvenience or damage to the material. They are so simple in construction that a glance at a Kenyon Auto Top instantly shows you how to handle it. They are light, strong, handsome and convenient



Write for catalogue which describes and illustrates the Kenyon Tops in detail.

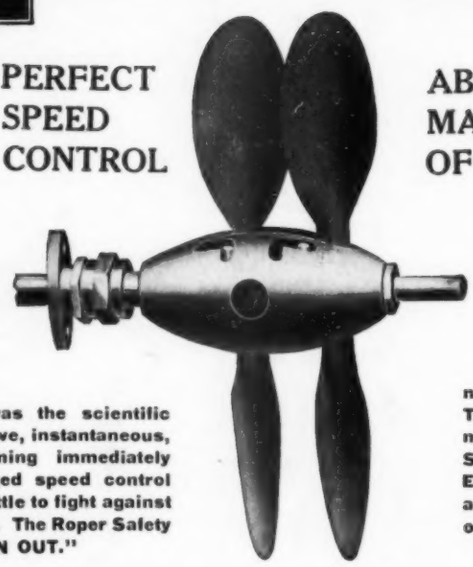
The R. L. Kenyon Company

WAUKESHA, WISCONSIN, Dept. K.

ROPER Safety Propeller

PERFECT SPEED CONTROL

ABSOLUTE MASTERY OF BOAT



Two years ago the Roper Safety Propeller was advertised to give PERFECT CONTROL to the motor-boat. This was a strong claim, interesting to boatmen—and true.

The Roper Safety Propeller was the scientific answer to the demand for positive, instantaneous, safe motor-boat control. Coming immediately after the failure of other alleged speed control devices, it had a tremendous battle to fight against honest prejudice and scepticism. The Roper Safety Propeller has triumphantly "WON OUT."

Hundreds of Roper Safety Propellers are now in use on all types of motor-boats and in almost all American waters. They are used alike by private owners and professional boatmen. They are used by the United States navy. They are winning endurance contests. They are standing up under the hardest commercial service and are making motor boating Safer, More Enjoyable and More Satisfactory. Everywhere and under whatever conditions they are used, they are highly endorsed by enthusiastic owners.

THE ONLY PERFECT CONTROL

The Roper Safety Propeller affords all the speed control flexibility of steam to the Internal Combustion Motor. Any change in speed in either direction is obtained through the simple movement of one lever. Entirely without engine racing, the boat may be reversed from full speed ahead to full speed astern or held at full stop, while the speed of the motor remains substantially constant. The engine "load" is practically the same through all ranges of speed. Once the engine is started, throttle and spark controls are done away with.

The advantages of Perfect Control have been thoroughly recognized. Manufacturers of reversing propellers and reverse gears have claimed equal control for their devices, but the ***principle*** of the ordinary reversing propeller will not admit of improvement, except in design and workmanship, and the reverse gear is in no sense a speed controlling device.

The Roper Safety Propeller is the Only practical speed controlling propeller. It has the field entirely to itself. It acts in effect as a governor of the motor, and one lever only is moved to give the speed desired. Regardless of the evolutions through which the boat may be put, there is no substantial variation in engine speed. The full power of the motor is always available, and racing, flooding, stalling and confusion are done away with.

Which makes the stronger appeal? That old misleading, fraudulent claim "perfect control" of the inadequate reversing propeller or gear, or the certain, immediate and absolute PERFECT CONTROL of the Roper Safety Propeller. Which is your choice, the shadow or the REAL THING? The testimony of users carries its own conviction. Write for "After the Trial."

AGENTS IN UNITED STATES

New York City—Henry C. Squires' Sons, 44 Cortlandt St.
Boston, Mass.—Kershaw-Williams Co., 77 Haverhill St.
Philadelphia, Pa.—W. S. Carman, The Bourse.
Portland, Me.—G. D. Thorndike, 29 Portland Pier.
Chicago, Ill.—James M. Wait & Co., 1205 Michigan Ave.
Jacksonville, Fla.—Geo. E. Chase & Co., 232 E. Bay St.
Portland, Ore.—Rierson Machinery Co.
Providence, R. I.—Walter Coleman & Sons, 300 S. Water St.
Seattle, Wash.—Palmer Bros., 800 First Ave., South.

AGENTS IN CANADA

Montreal—Henry Morgan & Co., Ltd., Colonial House.
Brantford—Schultz Bros. Co., Ltd.

C. F. ROPER & CO. ***Hopedale, Mass.***